E-Governance (CSC-307)

BSc. CSIT 5th Semester

St. Lawrence College, Kathmandu

(Affiliated to Tribhuvan University)

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Full Marks: 70+10+20 **Pass Marks**: 28+4+8

Credit hours: 3 **Nature of course**: Theory (3 Hrs.) + Lab (3 Hrs.)

Course Synopsis: This course contains concepts of E-Governance policies and data warehousing / data mining.

Goal: To provide the knowledge of good governance using information and communication technologies and case studies of different countries.

Course Contents:

Unit 1. Introduction **4 Hrs.**

E-Governance: Needs of E-Governance, Issues in E-Governance applications and the Digital Divide; Evolution of E-Governance, Its scope and content; Present global trends of growth in E-Governance: Other issues.

Unit 2. Models of E-Governance **10 Hrs.**

Introduction; Model of Digital Governance: Broadcasting/ Wilder Dissemination Model, Critical Flow Model, Comparative Analysis Model, Mobilization and Lobbying Model, Interactive-service Model/Government-to-Citizen-to-Government Model (G2C2G); Evolution in E-Governance and Maturity Models: Five Maturity Levels, Characteristics of Maturity Levels, Key areas, Towards Good Governance through E-Governance Models.

Unit 3. E-Governance Infrastructure and Strategies **6 Hrs.**

E-readiness: Digital System Infrastructure, Legal Infrastructural Preparedness, Institutional Infrastructural Preparedness, Human Infrastructural Preparedness, Technological Infrastructural Preparedness; Evolutionary Stages in E-Governance.

Unit 4. Data Warehousing and Data Mining in Government **5 Hrs.**

Introduction; National Data Warehouses: Census Data, Prices of Essential Commodities; Other areas for Data Warehousing and Data Mining: Agriculture, Rural Development, Health, Planning, Education, Commerce and Trade, Other Sectors.

Unit 5. Case Studies **20 Hrs.**

Nepalese Context: Cyber Laws, Implementation in the Land Reform, Human Resource Management Software; India: NICNET, Collectorate, Computer-aided Administration of Registration Department (CARD), Smart Nagarpalika, National Reservoir Level and Capacity Monitoring System, Computerization in Andra Pradesh, Ekal Seva Kentra, Sachivalaya Vahini, Bhoomi, IT in Judiciary, E-Khazana, DGFT, PRAJA, E-Seva, E-Panchyat, General Information Services of National Informatics Centre; E-Governance initiative in USA; E-Governance in China; E-Governance in Brazil and Sri Lanka.

Text / Reference books:

1. E-Governance: Concepts and Case Studies, C.S.R. Prabhu, Prentice-Hall of India Private Limited, 2004.
2. Backus, Michiel, e-Governance in Developing Countries, IICD Research Brief, No. 1, March 2001.

Unit 1 - Introduction

E-Governance

The term e-Governance implies technology driven governance. E-Governance is the application of Information and Communication Technology (ICT) for delivering government services, exchange of information communication transactions, integration of various stand-alone systems and services between Government-to-Citizens (G2C), Government-to-Business (G2B), Government-to-Government (G2G) as well as back office processes and interactions within the entire government frame work.

With the use of e-Governance, the government services will be made available to the citizens in a convenient, efficient and transparent manner. The three main target groups that can be distinguished in governance concepts are Government, citizens and businesses. Generally four basic models are available-Government to Customer (Citizen), Government to Employees, Government to Government and Government to Business.

E-Government

E-government is a general term describing the use of technologies to facilitate the operation of government and the distribution of government information and services. The term is an abbreviation of the phrase "electronic government," and it deals heavily with Internet applications to aid in governments. It also covers a number of non-Internet concerns.

In the general sense, e-government can refer to such ordinary uses of electronics in government as large-scale use of telephones and fax machines, surveillance systems, tracking systems such as RFID tags, and even the use of television and radios to spread government-related information. In this sense, it is not a new phenomenon by any means. The use of radio waves to spread disaster warnings, or to give information on voting, is a aspect that has been in use for many years. In many countries with state-operated media, the entire media becomes a form of e-government, helping to spread pro-government messages.

Newer non-Internet applications offer the promise of streamlining government procedures and improving functionality. Government systems to track citizens, ever-present surveillance, and biometric identification are some applications that have many privacy advocates concerned about the growing role of government in people's lives.

With the growing universality of the Internet, new opportunities are becoming available for managing the business of government online. The distribution of social welfare programs, the handling of government works projects, and providing information on representatives online are all examples of e-government in action.

In addition to the Internet, mobile phones offer an even more convenient channel through which to distribute government information. By using text-messaging, governments are able to send out region-wide and specific emergency warnings, provide up-to-the-minute information upon request, and in essence make government accessible to the people no matter where they may be, at any time.

One area under much discussion and debate is finding a way to implement electronic voting on everything from public measures to the election of representatives. Security concerns and a lack of universal access to technology have slowed the implementation of e-voting, but many advocates hold that it is simply a matter of time before these concerns are sufficiently addressed and it becomes a standard.

E-government does not mean putting more computers on the desks of government offices, its more than just a government website on the Internet. Political, social, economic and technological aspects determine e-governance. It establishes a relationship between government officials and citizens, providing greater access to government information and services by making the government accessible online; promoting citizen participation by enabling citizens to interact more conveniently with government officials, such as by requesting government service and filing required documents through website; increasing government accountability by making its operations more transparent, thereby reducing the opportunities for corruption; and supporting development goals by providing business, rural and traditionally underserved communities with information, opportunities and communications capabilities.

E-government is a process of transforming government; it requires planning, political will and a sustained dedication of resources. Success of e-government will not be guaranteed with the purchase of advanced technology or the direct automation of complex procedures until it can increase the rate of citizen participation there by bringing about the greater effectiveness in government. Technology introduction cannot change the mentality of bureaucrats who do not view the citizen as valued customer of government or an important participant in decision-making.

E-government is not only used in developed countries. Some of the most innovative uses of the Internet in governance are being successfully used in the developing countries, as well.

Non-Internet e-Government

While e-government is often thought of as "online government" or "Internet-based government," many non-Internet "electronic government" technologies can be used in this context. Some non-Internet forms include telephone, fax, PDA, SMS text messaging, MMS, wireless networks and services, Bluetooth, CCTV, tracking systems, RFID, biometric identification, road traffic management and regulatory enforcement, identity cards, smart cards and other Near Field Communication applications; polling station technology (where non-online e-voting is being considered), TV and radio-based delivery of government services (e.g., CSMW), email, online community facilities, newsgroups and electronic mailing lists, online chat, and instant messaging technologies.

Difference between e-governance and e-government

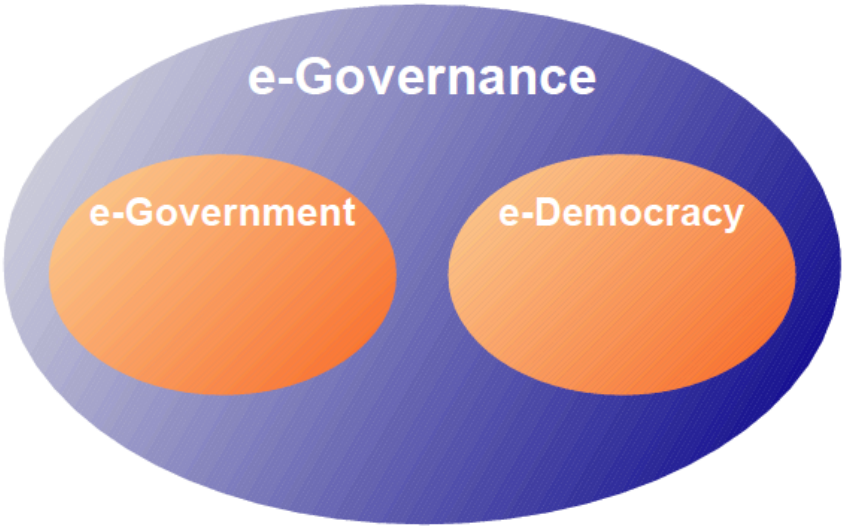
Both the terms are treated to be the same, however, there is some difference between the two.

"E-government" is the use of the ICTs in public administrations- combined with organizational change and new skills- to improve public services and democratic processes and to strengthen support to public". The problem in this definition to be consistent with the definition of e-governance is that there is no provision for governance of ICTs. As a matter of fact, the governance of ICTs requires most probably a substantial increase in regulation and policy-making capabilities, with all the expertise and opinion-shaping processes among the various social stakeholders of these concerns. So, the perspective of the e-governance is "***the use of the technologies that both help governing and have to be governed***".

E-Governance is the future; many countries are looking forward to for a corruption free government. **E-government is one-way communication protocol whereas E-governance is two-way communication protocol**. The essence of E-governance is to reach the beneficiary and ensure that the services intended to reach the desired individual has been met with. There should be an auto-response system to support the essence of E-governance, whereby the Government realizes the effectiveness of its governance.

E-governance is by the governed, for the governed and of the governed.

Establishing the identity of the end beneficiary is a true challenge in all citizen-centric services. Statistical information published by governments and world bodies do not always reveal the facts. Best form of E-governance cuts down on unwanted interference of too many layers while delivering governmental services. It depends on good infrastructural setup with the support of local processes and parameters for governments to reach their citizens or end beneficiaries. Budget for planning, development and growth can be derived from well laid out E-governance systems.



Strategic Objectives of e-Governance

The strategic objective of e-governance is to support and simplify governance for all parties - government, citizens, businesses and its employees. The use of ICTs can connect all three parties and support processes and activities. There may be two major objectives of e-governance:

1. **Service to the Public:** This objective of e-government is to satisfactorily fulfill the public's needs and expectations on the front-office side, by simplifying their interaction with various online services. The use of ICTs in government operations facilitates speedy, transparent, accountable, efficient and effective interaction with the public, citizens, business and other agencies.

2. **Efficient Government:** In the back-office, the objective of e-government in government operations is to facilitate a speedy, transparent, accountable, efficient and effective process

for performing government administration activities. Significant cost savings in government operations can be the result.

For implementing these strategies into reality, government must be subjected to transformation.

The transformation process is not so easy and not so simple. It requires a coherent strategy and should begin with an examination of the nation's regulatory environment and the ability of the population to make use of planned technologies. The primary driving factor for e-government reform should not be the potential it offers to save money and reformation does not mean cutting staff. The savings incurred from e-government initiatives most often benefit the businesses and citizens utilizing the improved system more so than the government agencies that invested in them to begin with. In order to realize the benefits of transformation themselves, governments must develop a citizen-centric model involving key stakeholders outside of government— community, businesses, and professional associations, scientists, academics and NGOs. Without their input and demand, even e-government projects that focus on internal government processes may not prove successful because citizens are unlikely to use a system that does not respond to their needs.

Process reform, leadership, strategic investment, collaboration and citizen participation are essential elements in the transformation process. Once government makes strategies to transform the governance process, it must prepare to meet the significant challenges and opportunities that will arise during implementation. The implementation process should address the issues of infrastructure development, law and public policy, e-literacy, accessibility, privacy, security and workforce issues. Awareness, education and rollout programs are also needed. To make the e-governance initiative successful, a good marketing program is required through out the country to encourage citizens to make use of them.

E-Governance and Nepal

There has been much talk about good governance but little attention has been given to e-governance. In the 21st century, good governance naturally implies e-governance. By governance, we mean methods of decision-making and implementation through active involvement of the stakeholders.

E-governance entails the use of electronic means, particularly the Internet, in governance. E-governance connects civil society, private and public sectors through faster, cheaper and transparent interactions. For the people, it brings online services. For the internal administration of the government, it entails efficiency, economy and effectiveness.

E-government ranges from providing relevant information on the web to the public to one-point service in an integrated information system of the government. While people are provided with information at home in the beginning phase, people and businesses can carry out all interactions and complete transactions without going to a government office in the final stages.

In fact, the state machinery that is complete with files and cupboards, centralized processes and hierarchical structures turn into an automated millisecond service system.

In the last few years, e-governance has been the goal of the Nepal Government. With the adoption of IT Policy in 2057 B.S., the government aimed at developing a knowledge-based society through rapid development of information technology. It set some ambitious targets like computer education for all by 2010, access to the Internet in every village, e-medicine and computerization of government offices.

Despite the adoption of the sound policy, the targets remain distant. The government has introduced a computerized system in many central offices, and some relevant information can be found on the web. However, for the realization of e-governance, these efforts lag far behind. The government networking system is being described as a '***not working system'***.

It is true that e-governance is not that easy. It requires enduring political commitment, large-scale economic investment, and a high level of technological expertise, social equality and social access. In a country where the government changes very year, trade scarcity and low growth rate characterize the economy, low literacy and inequality together with linguistic differences are rampant in society and old theoretical education has not embraced ICT, and IT skills are rare, e-government has been pushed further away.

The greatest challenge to implementing e-governance is the development of infrastructure. Therefore, due emphasis should be given to the development of e-government infrastructure in the country. It needs to be built up for all sectors of e-governance: access to services by the citizens, delivery of services by the government and internal use by government departments.

The government should also ensure a coordinated development of infrastructure in various parts of the nation to avoid the divide between ICT enabled and non-enabled. While on one end the government needs large computing infrastructure to develop and deliver e-government services on a continuous basis, infrastructure is also needed at the end for the citizens to derive the benefits of the services.

The process of modernization of governance is not simple or quick. It requires a clear strategy, beginning with examination of the nation's political will, resources, regulatory environment and ability of the population to make use of planned technologies.

It calls for fundamental changes in the interactions and relationships between the governed and the governor. It is the fusion of ICT with the modernization process of the notorious public administration to reinvent a people-centered approach to governance.

The poor and developing countries have not been able to catch up with the speed of industrialization of the developed economies, and they have been further marginalized. This marginalization has created unending dependency. The experiences of the early decade of the ICT revolution suggest that they might also fall behind if they do not pay extra attention to the proper use of ICT.

The public sector is one of the key sectors where ICT can trigger a wider impact in the development of the country. The geographical terrain of Nepal is difficult. It is perhaps the use of ICT and e-governance that can fulfill these shortcomings.

ICT's application

While designing new structures, processes and agencies of public administration, they should be judged from the point of view of applicability of ICT. E-governance should incorporate central to local services and active participation to passive service reception. The vision of a new Nepal should consist of e-governance that is accessible to all without any kind of explicit or implicit divide.

[Text from Editorial of The Rising Nepal, National Daily]

Nepal is facing numerous challenges while introducing and implementing e-government programs, such as political issues, inadequate human resources, lack of necessary legal framework, little public awareness about ICT, poor ICT infrastructure across the nation, to name a few. Due to lack of integrated planning, ICT resources in the government offices are not

fully utilized. Most of the government officials have a mindset that they will lose their jobs if ICT is introduced in their working environment. As a result, they are resistant to the proposed changes.

Nepal is in the process of being New but its just becoming popular slogan of political parties. "New Nepal" should not only become a popular slogan but it should really happen with the positive values and aspirations of its citizens geared towards the peace and progress. There are many dimensions streamlined and drivers identified to make "New Nepal" dreams come true. One of such dimensions is the reformation of the government. Governance and its service process should be well reengineered to fulfill the aspirations of its citizens. Information and Communication Technology (ICT) and its tools can help its effective and efficient transformation.

With the beginning of the information age, the way we work, study, and live have been experiencing dramatic changes. Due to the influence of economic and information globalization and the rise of the digital economy, governments are "reinventing" themselves to meet new expectations and the priorities of citizens and businesses. These dynamics are compelling many governments to create a new vision for its relationship with businesses and citizens and to create a new organizational structure to fulfill its mandate. E-Government can fulfill the mandate of government formulating a new vision of how government views its citizens, employees and businesses, and building a citizen-centered, service-oriented, public-participative government with efficient, accountable, transparent and performance government system. ICT based online service is the most democratic and unbiased service system. It offers equal opportunity to all races, genders, and ethnic groups.

E-Government breaks the barrier of geographical diversity and makes the government services handy to all citizens at villages who are even not connected by roads and opens up many opportunities, provided Internet connectivity is available either through wireless communication, fiber optic cables, dial-ups, VSATs or whatever other medium. Besides providing service to citizens, it's important to empower and motivate government employees to expect better service from them. E-Governance should transform the government workers into empowered knowledge workers. Nepal should not miss the benefits of global economy and specially the benefits offered by Internet.

Although Nepal stands at the lower rung in the global scenario of ICT, there have been noticeable developments in the ICT sector in the recent past. The telecommunication facilities

have improved remarkably. The academic institutions/universities producing ICT professionals/human resources have expanded. The communication technologies, both electronic and print media, have extended their access to general people. Uses of the Internet, emails and computers are gaining in popularity. Tele-centers are widening their outreach. Several e-Government applications are being introduced.

Noteworthy among the country's recent e-Government initiatives is Nepal's e-Government Master Plan, completed in November 2006. Another milestone is the preparation of an ICT Development Project, which has worked out detailed investment proposals for prioritized projects. Negotiations are underway between the Government of Nepal and the Asian Development Bank for its financing and implementation arrangements. The Government of Nepal is, thus, keen and committed to promote e-Government for implementation of various G2G, G2C and G2B projects defined under respective priority areas.

But the road to e-Government is not easy and straight. There are no doubt ample opportunities for national development through e-Government promotion. There are also several hurdles, problems and challenges that need to overcome for successful accomplishments of Nepal's e-Government vision.

NEWS : Nepal slips on e-government development indicator

Although the government touts it is keenly focusing on the development of Information Communication Technology, particularly e-governance, Nepal has slipped 11 positions and landed on 164th position in global ranking of 193 countries on e-government development, according to a survey of United Nations Public Administration Network. The network, which published its report on e-Government Survey 2012, says Nepal was ranked 153rd position in a similar survey in 2010. The drop in rank suggests the government of Nepal is still not efficiently using the ICT tools to deliver public services.

The survey ranks UN member countries based on E-Government Development Index, which is a composite indicator that measures the willingness and capacity of national administrations to use information and communication technologies to deliver public services.

The government of the Republic of Korea retained first position earned in 2010. Likewise, Netherlands and the United Kingdom became second and third most advanced e-government in the world respectively. Denmark, the United States and France are among top five leaders in e-government.

Among South Asian countries, Maldives is ranked highest (at 95th position) for adopting e-governance. Like Nepal, India too slipped down five spots this year and was ranked at 124th position. Sri Lanka and Bangladesh are ranked 115th and 134th respectively.

The report states that countries like Israel and Luxembourg have entered in top 20 investing considerable resources in e-government in the last few years.

The score of Nepal in online services is 0.28 out of 1, similar to that of 2010. According to the report, Nepal scored just 0.026 in e-participation and it had scored 0.05 in previous survey. Similarly, India scored 0.18 in e-participation and its score in 2010 was 0.20.

[*News on MyRepublica.com*]

Needs of E-Governance

E-Governance seek to achieve

- Efficiency
- Transparency
- Citizen's participation

Enabling e-governance through ICT contributes to

- Good governance, Trust and Accountability
- Citizen's awareness, empowerment and Citizen's welfare
- Nation's economic growth
- Ensure transparent, timely and hassle free delivery of services.
- Provide greater public access to information and has proved to be a more efficient and cost-effective way of governance.
- E-Government can transform citizen service, provide access to information to empower citizens, enable their participation in government and enhance citizen economic and social opportunities, so that they can make better lives, for themselves and for the next generation.

WHY e-GOVERNANCE?

1. To build an informed society – An informed society is an empowered society. Only informed people can make a Government responsible. So providing access to all to every piece of information of the Government and of public importance is one of the basic objectives of E-Governance.

2. To increase Government and Citizen interaction - In the physical world, the Government and Citizens hardly interact. The amount of feedback from and to the citizens is very negligible. E-Governance aims at build a feedback framework, to get feedback from the people and to make the Government aware of people's problems.

3. To encourage citizen participation - True democracy requires participation of each individual citizen. Increased population has led to representative democracy, which is not democracy in the true sense. E-governance aims to restore democracy to its true meaning by improving citizen participation in the Governing process, by improving the feedback, access to information and overall participation of the citizens in the decision-making.

4. To bring transparency in the governing process - E-governance carries an objective to make the Governing process transparent by making all the Government data and information available to the people for access. It is to make people know the decisions, and policies of the Government.

5) To make the Government accountable - Government is responsible and answerable for every act decision taken by it. E-Governance aims and will help make the Government more accountable than now by bringing transparency's and making the citizens more informed.

6) To reduce the cost of Governance - E-Governance also aims to reduce cost of governance by cutting down on expenditure on physical delivery of information and services. It aims to do this by cutting down on stationary, which amounts to the most of the government's expenditure. It also does away with the physical communication thereby reducing the time required for communication while reducing cost.

7) To reduce the reaction time of the Government – Normally due to red tapism and other reasons, the Government takes long to reply to people's queries and problems. E-Governance aims to reduce the reaction time of the Government to the people's queries and problems, because 's problems are basically Government's problems as Government is for the people.

E-Governance provides **SMARRT** Government. The Acronym **SMARRT** refers to Simple, Moral, Accountable, Responsive, Responsible and Transparent Government.

S - The use of ICT brings simplicity in governance through electronic documentation, online submission, online service delivery, etc.
M - It brings Morality to governance as immoralities like bribing, red-tapism, etc. are eliminated.
A - It makes the Government accountable, as all the data and information of Government is available online for

consideration of every citizen, the NGOs and the media.

R - Due to reduced paperwork and increased communication speeds and decreased communication time, the Government agencies become responsive.

R - Technology can help convert an irresponsible Government Responsible. Increased access to information makes more informed citizens. And these empowered citizens make a responsible Government.

T - With increased morality, online availability of information and reduced red-tapism the process of governance becomes transparent leaving no room for the Government to conceal any information from the citizens.

Advantages of E-Governance

Following are the advantages of E-Governance:

1. **Speed** – Technology makes communication swifter. Internet, Phones, Cell Phones have reduced the time taken in normal communication.

2. **Cost Reduction** – Most of the Government expenditure is appropriated towards the cost of stationary. Paper-based communication needs lots of stationary, printers, computers, etc. which calls for continuous heavy expenditure. Internet and Phones makes communication cheaper saving valuable money for the Government.

3. **Transparency** – Use of ICT makes governing process transparent. All the information of the Government would be made available on the Internet. The citizens can see the information whenever they want. Current governing process leaves many ways to censor the information from all the people. ICT helps make the information available online eliminating all the possibilities of censoring of information.

4. **Accountability** – Once the governing process is made transparent the Government is automatically made accountable. Accountability is answerability of the Government to the people. It is the answerability for the deeds of the Government. An accountable Government is a responsible Government.

Issues in E-Governance applications

A number of issues, some old and some new have arisen in e-governance application, for example:

(i) Lack of strategies and financial plan.

(ii) The project implementation is generally vendor driven

(iii) Lack of standardization (For example, similar projects are carried out by different state agencies using incompatible file formats and application standards)

(iv) Reverse compatibility of application with legacy systems are missing in several projects.

(v) The IT Infrastructures are obtained just before building the application or digitizing the data.

(vi) Physical security is emphasized, whereas the Logical and application security is left to vendors in many cases.

(vii) Lack of understanding by the departments, for the components of e-governance applications, which can be outsourced or can be carried out in-house.

Phases in E-Governance

1. Phase 1: Information Technology framework
2. Phase 2: Digitization
3. Phase 3: Citizen Access
4. Phase 4: Content Development

In the first phase: Information Technology framework

The IT framework need to be identified and the project should be rolled out only after evaluating the feasibility of the project in terms of capacity building, readiness and financial sustainability.

Consequences: – If the project feasibility is not analyzed properly, the project could be the great failure, if it gets success by luck, it lead to delays and increased cost of the project

In the second phase: Digitization

The digitization is important to the success of the project. Large amount of data leads to mess and redundancy of the project. Before the digitization is initiated the data should be filtered. The data cleansing should be done periodically and only by the departments.

Problem: – The outsourced agency that is generally entrusted with this task is not the correct approach, since this leads to corruption, stealing and weakening of data.

In the third phase - Citizen Access:

To make the information available, the infrastructure plays a very vital role. The infrastructure includes telecommunication network, Electricity, Booths etc.

In the Fourth phase - Content Development:

This phase is not limited to content updating, but the transactions must be merged, scrutinized and updated. The transactional data must be converted into historical data and separate data mart may be created.

e-Governance Challenges

e-governance, however, is not really the use of IT in governance but as a tool to ensure good governance. e-governance does not mean proliferation of computers and accessories; it is basically a political decision which calls for discipline, attitudinal change in officers and employees, and massive government process re-engineering.

All implementers and drivers of e-governance initiatives agree that the biggest challenge of deploying e-governance is not technology but change management. Change management is important not only in terms of cultural change but also in terms of changing operations and processes workflow that the automated environment will introduce.

"It's important to educate people at all levels about the benefits of technology. The various benefits and advantages of e-enabling the system should be communicated clearly right at the beginning to ensure popular support which will lead to greater chances of success."

It is important to explain to people that the introduction of IT will not take away existing jobs but will make them easier, and if less manpower is required for operations the staff can be re-deployed elsewhere with no threat to their career growth path.

The key challenges with electronic governance are not technology or Internet issues but organizational issues like:

- Redefining rules and procedures
- Information transparency
- Legal issues
- Infrastructure, Skill and awareness
- Access to right information
- Interdepartmental collaboration
- Tendency to resist the change in work culture

Other obstacles are geographical distances, lack of trained human resources, and lack of ICT penetration in remote areas. For instance, a good e-governance application will not benefit anybody in remote areas if there is no supporting infrastructure such as electricity, computers and connectivity. Many pilot projects have been successfully implemented in almost all areas of e-governance, "Rather than having an obsession to undertake pilot projects, we should capitalize on the existing successful examples in the country and customize them for our use."

The challenges of connectivity have also reduced over the years with the falling prices of bandwidth and increased reach of connectivity service providers. Major VSAT service providers already have established large footprints, and telecom service providers have stepped up their leased line offerings even in previously unrepresented territories. Many governments have developed nation wide networks, customized applications, and data banks. But the interconnectivity of the servers is an issue, which calls for the establishment of state data centers.

The issues such as standardization, inter-operability, security, and propriety vs. open source are still required to be solved.

The other set of challenges lie in extending the reach of e-Governance services to Nepalese population that lives in villages. These include:

- Assessment of local needs and customizing e-Governance solutions to meet those needs
- Connectivity
- Content (Local content on Local language)
- Building Human Capacities
- e-Commerce
- Sustainability

e-Governance Challenges Specific to Nepal

- **Lack of Integrated Services:** Most of the eGovernance Services being offered by the governments are not integrated. This can mainly be attributed to ***Lack of Communication between different Departments.*** So the information that resides with one department has no or very little meaning to some other department of Government.
- **Lack of Key Persons:** eGovernance projects lack key persons, not only from technological aspect, but from other aspects as well.
- **Different Languages:** A challenge due to the diversity of the country. It enforces need to do governance in local languages. Ensuring eGovernance in local language is a big task to achieve.
    - Success factors of e-Gov projects
        - *20% Technology*
        - *50% Process*
        - *20% Change Management*
        - *Rest is LUCK*

The Digital Divide

The digital divide refers to the gap between people who enjoy regular access to technology, (*such as computers and their related functions like ability to get on the Internet*), and those who do not have this access. There are many ways to look at or consider the digital divide. The divide separates the "haves and have-nots".

A term, digital divide used to describe the difference between people who have access to and the resources to use new information and communication tools, such as the Internet, and people who do not have the resources and access to the technology. The term also describes the discrepancy between those who have the skills, knowledge and abilities to use the technologies and those who do not. The digital divide can exist between those living in rural areas and those living in urban areas, between the educated and uneducated, between economic classes, and on a global scale between more and less industrially developed nations.

Internet and computer use has undoubtedly increased in the urban areas of Nepal and the digital divide may be smaller within certain populations but the case is totally different on rural areas. It remains a fact that poorer people may not be able to afford technology, and poorly funded schools aren't always able to offer regular use of technology to their students. In contrast, students in middle class and upper class families, and in schools that have medium to excellent funding, may have technology at home and school. This gives them considerable advantages over those whose homes and schools don't have the same offerings.

Poorer nations are divided more from richer nations in this respect, and many argue that the wealth of information available to poorer nations through the Internet could help improve lives and put an end to poverty.

To this end there are many charitable and government run organizations that help to shrink the digital divide by providing computers or funding to get computers to individuals or educational institutions. They may address the divide in a specific country that is developing too. However, this can be problematic. In countries with severe poverty, many feel that first efforts should go toward providing clean water, medical care and food as needed instead of giving people technology access. Moreover, in areas that don't have electricity sources, digital materials can be relatively useless, and some argue trying to end the digital divide in extremely poor countries may not be possible until these countries achieve certain quality of living standards.

Conceptualization of the digital divide is often as follows:

- Subjects of connectivity, or who connects: individuals, organizations, enterprises, schools, hospitals, countries, etc.
- Characteristics of connectivity, or which attributes: demographic and socio-economic variables, such as income, education, age, geographic location, etc.
- Means of connectivity, or connectivity to what: fixed or mobile, Internet or telephony, digital TV, etc.
- Intensity of connectivity, or how sophisticated the usage: mere access, retrieval, interactivity, innovative contributions.
- Purpose of connectivity, or why individuals and their cohorts are (not) connecting: reasons individuals are and are not online and uses of the Internet and ICTs.

Scope (*Possible Area*) of e-Governance

e-Government is the use of information technologies(IT) in public administrations combined with organizational changes to improve public services.

Governance is all about flow of information between the Government and Citizens, Government and Businesses and Government and Government. E-Governance also covers all these relationships as follows:

A. Government to Citizen (G2C)
B. Citizen to Government (C2G)
C. Government to Government (G2G)
D. Government to Business (G2B)

A. Government to Citizen

Government to Citizen relationship is the most basic aspect of E-Governance. In modern times, Government deals with many aspects of the life of a citizen. The relation of a citizen with the Government starts with the birth and ends with the death of the citizen. A person transacts with the Government on every corner of his life. It may be birth registration, marriage registration, divorce registration or death registration.

The G2C relation will include the services provided by the Government to the Citizens. These services include the public utility services i.e. Telecommunication, Transportation, Post, Medical facilities, Electricity, Education and also some of the democratic services relating to the citizenship such as Certification, Registration, Licensing, Taxation, Passports, ID Cards etc.

Therefore E-Governance in G2C relationship will involve facilitation of the services flowing from Government towards Citizens with the use of Information and Communications Technology (ICT).

1. E-Citizenship - E-Citizenship will include the implementation of ICT for facilitation of Government Services relating to citizenship of an individual. It may involve online transactions relating to issue and renewal of documents like *Ration Cards (India), Passports, Election Cards, Identity Cards*, etc. It will require the Government to create a virtual identity of every citizen so as to enable them to access the Government services online. For the same, Government would need to create a Citizen Database, which is a huge task.

2. E-Registration - E-Registration will cover the online registration of various contracts. An individual enters into several contracts during his life. Many of these contracts and transactions require registration for giving it legality and enforceability. Such registration may also be made ICT enabled. E-registration will help to reduce a significant amount of paperwork.

3. E-Transportation - E-Transportation services would include ICT enablement of services of Government relating to Transport by Road, Rail, Water or Air. This may involve online –

1. booking and cancellation of tickets,
2. status of vehicles, railways, boats and flights,
3. issue and renewal of Driving Licenses,
4. registration and renewal of vehicles,
5. transfer of vehicles,
6. payment of the fees of licenses,
7. payment of fees and taxes for vehicle registration,

4. E-Health - E-Health services would be ICT enablement of the health services of the Government. Under this interconnection of all hospitals may take place. A patient database may be created. A local pharmacy database may also be created.

5. E-Education - E-Education would cover the implementation of ICT in imparting of education and conducting of Courses. Distant as well as classroom education will be

facilitated with the use of ICT. Use of Internet can reduce the communication time required in Distance education; Internet may also help in conducting online classes.

6. E-Help - E-Help refers to facilitation of disaster and crisis management using ICT. It includes the use of technologies like Internet, SMS, etc. for the purpose of reducing the response time of the Government agencies to the disasters. NGOs help Government in providing help in situations of disasters. Online information relating to disasters, warnings and calls for help can help the Government and the NGOs coordinate their work and facilitate and speed up the rescue work.

7. E-Taxation - E-Taxation will facilitate the taxing process by implementing ICT in the taxing process. Online tax due alerts and online payment of taxes would help transact faster.

B. Citizen to Government

Citizen to Government relationship will include the communication of citizens with the Government arising in the Democratic process like voting, campaigning, feedback, etc.

1. E-Democracy - The true concept of Democracy includes the participation of the citizens in the democratic and governing process. Today due to the increased population the active participation of the citizens in governing process is not possible. The ICT can help enable the true democratic process including voting, public opinion, feedback and Government accountability.

2. E-Feedback - E-Feedback includes the use of ICT for the purpose of giving feedback to the Government. Lobbying is pursuing the Government to take a certain decision. Use of ICT can enable online feedback to the Government, online debates as to the Government services.

C. Government to Government

G2G relationship would include the relationships between Central and State Government and also the relationship between two or more Government departments.

1. E-administration - E-administration would include the implementation of ICT in the functioning of the Government, internally and externally. Implementation of ICT can reduce the communication time between the Government Departments and

Governments. It can substantially reduce paperwork if properly used. E-administration will also bring morality and transparency to the administration of Government Departments.

2. E-police - The concept of E-police is little different from Cyber-Police. Cyber Police requires technology experts to curb the electronic/cyber crimes. E-police refers to the use of ICT for the purpose of facilitating the work of the Police department in investigation and administration. The concept of E-police includes databases of Police Officers, their performances, Criminal databases – wanted as well as in custody, the trends in crimes and much more. ICT can help reduce the response time of the Police department and also reduce cost by reducing paperwork.

3. E-courts - The concept of E-Court will include the ICT enablement of the judicial process. Technology may help distant hearing, online summons and warrants and online publication of Judgments and Decrees.

D. Government to Business

1. E-Taxation - Corporate sector pays many taxes, duties and dues to the Government. Payment of these taxes and duties will be made easier by E-Taxation. Online taxing and online payment of taxes can help reduce cost and time required for physical submission of taxes. ICT can also help crosscheck the frauds and deficiencies in payment, further bringing accuracy and revenue to the Government.

2. E-Licensing - Companies have to acquire various licenses from the Government, similarly the companies have to acquire various registrations. ICT enablement of the licensing and registration can reduce time and cost.

3. E-Tendering - E-Tendering will include the facilities of online tendering and procurement. It will show online alerts as to new opportunities of business with the Government and also online submission of tenders and online allotment of work. It will reduce time and cost involved in the physical tendering system.

Evolution of E-Governance

- Initiatives were take up as early as 1972 by Chile
- Prof. Stafford Beer implemented for President Allende of Chile, the first governance software that would help the government survive a severe crisis.
- Major contribution by US Vice President Al Gore in early 1990s, which rooted worldwide in the information superhighway.
- Widespread in US, UK, Canada, Australia and India
- Focus largely on development of infrastructure such as fiber-optic networks.
- Concept of Information Society or Knowledge Society evolved
- E-governance came into a formalized and focused manner with partial success to implement Information System in the government departments and public organizations.
- During 1980s and 90s, govt. all over the world lagged behind the commercial world in accepting and implementing ICT.
- Commercial and industrial world went far ahead all over the world in harnessing the potential of ICT in their core and peripheral activities. They used ICT to reach out to their customers and business partners, thereby impressively enhancing their quality, speed and convenience.
- Visible success cases of use of ICT
  - ATM services
  - 24 hour call center
  - E-Shopping
- Software export increase (banking, financial, aviation, industrial sector from India, Ireland, Israel, China)
- 1990s and 2000 - Development of ITES (IT enabled Society)
  - Resulted in remote services like call centers, data entry

Point to be noted - All the above-mentioned services are not e-Governance service.

- Government last in the queue of institutions providing IT services.
- Initial Efforts in E-governance:
  - Partial automation of existing paper bases manual process
  - Did not result in significant Business Reengineering Process compared to private sector
  - No big changes seen in government enterprises

- May be because of
- Conservatism
- Resistance to change
- Rigidity of legislative body

• Major issues that has become highly relevant for large-scale implementation of ICT in governance
  – Issue of Security
  – Privacy
  – Vulnerability (exposure) of public ICT infrastructure to crime

– Potential to abuse, terrorism and general crime

– Problems in social cohesion
  – Social Exclusion --- digital divide

• The scope of ICT implementation in government machinery result in
  – Improvement of efficiency and effectiveness of the executive function of government, including delivery of public services
  – Greater transparency of government to citizens and business permitting greater access to the information generated or collated by the government
  – Fundamental changes and improvement in relations between citizen and the state thereby improving the democratic process
  – Better interactions and relationships amongst different

• Wings of the same government
• State or local government within a country
• Countries whose governance are web-enabled
• Any e-governance activity/project involves appropriate
  – Hardware and corresponding system software
  – Networking of the hardware identified above- both the Internet and Intranet environment
  – Application software

UN e-Government Readiness Index

There are several international rankings of e-government maturity. *The Eurostat rankings, Economist, Brown University, and the UN e-Government Readiness Index are among the most frequently cited.* The United Nations Public Administration Network conducts a bi-annual e-

Government survey, which includes a section titled *e-Government Readiness*. It is a comparative ranking of the countries of the world according to two primary indicators:

i) the state of e-government readiness; and

ii) the extent of e-participation.

The following is the list of the top 10 countries according to the UN's 2012 e-Government Readiness Index.

Rank	Country	Index
1	Republic of Korea	0.9283
2	Netherlands	0.9125
3	United Kingdom	0.8960
4	Denmark	0.8889
5	United States	0.8687
6	France	0.8635
7	Sweden	0.8599
8	Norway	0.8593
9	Finland	0.8505
10	Singapore	0.8474
11	Canada	0.8430
12	Australia	0.8390
13	New Zealand	0.8381
14	Liechtenstein	0.8264
15	Switzerland	0.8134

e-Government by country

[ASSIGNMENT]

e-Government – an alternative approach

Recent government policy updates have seen a shift away from e-Government towards a much more radical focus on transforming the whole relationship between the public sector and users of public services. This new approach is referred to as Transformational Government. Transformation programs differ from traditional e-Government programs in four major ways:

- They take a whole-of-government view of the relationship between the public sector and the citizen or business user.
- They include initiatives to e-enable the frontline public services: that is, staff involved in direct personal delivery of services such as education and healthcare – rather than just looking at transactional services which can be e-enabled on an end-to-end basis.
- They take a whole-of-government view of the most efficient way managing the cost base of government.
- They focus on the "citizen" not the "customer". That is, they seek to engage with the citizens as owners of and participants in the creation of public services, not as passive recipients of services.

Present global trends of growth in E-Governance

• According to press reports during the end of 2002

– Indicate a trend of global growth in e-governance utilization

– Adults using Internet worldwide increase by 15% according to the findings of Second Government Online Study published by Taylor and Nelson.

– 3 out of 10 citizens (30%) access government services online compared with only a quarter (26%) in 2001

• Government online services mostly used for

– Search Information (24%)

– Download Information (11%)

– Increase in % to search info – 20% to 24% from Sep 2001 to Sep 2002

• Globally, online government transactions increased from just 6% to 7% during 2001 and 2002 and the percentage of those providing personal details to government increased from 7% to 8%

• E governance usage in different countries (between 2001-2002)

– Australia – significant increase from 31% to 46%

– Turkey – 3% to 13%

– Netherlands – 32% 41%

– US – 34% to 43%

– Japan – decrement by 4% - 17% to 13%

• In 2001, security issue was the main concern which improved globally in 2002.

• 2001 – 14% felt secured with credit card and bank account numbers

• 2002 – this increased to 23%

• Highest levels of safety was seen in the Scandinavian Market (Denmark, Finland, Norway and Sweden) together with some South East Asian markets (Singapore and Hong Kong)- around 1/3 of users felt safe.

• In contrast- 90% of Japanese felt accessing online services unsafe.

• Germany 82% and France 76% - unsafe

Other Key Findings

• Governance online service is more dominant to men (33%) than women (26%)

• 2001 – 2002 - Subsequent rise in government online usage among

– 35-44 years old (22% to 36%)

– 55-64 years old (2% to 18%)

– 65 years and above (7% in 2001 and 5% in 2002)

• Globally, no. of people making government transaction online = people making online shopping transaction

• 15% of Internet users have made online government transactions and in addition 15% have made an online purchase at least during that year.

• Only 16% users in Hungary access government online services while its 81% in Norway

• In countries like Singapore, Norway and Sweden – high usage of online government services as the citizens feel comfortable with this approach of dealing with the government

• In Britain, New Zealand and South Korea – usage of government online services lags behind the normal Internet usage

• All the above statistics on usage of e-governance services is time bound. Over the years, there has been a definite rise in the usage of e-governance all over the world.

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E-Governance (CSC-307)

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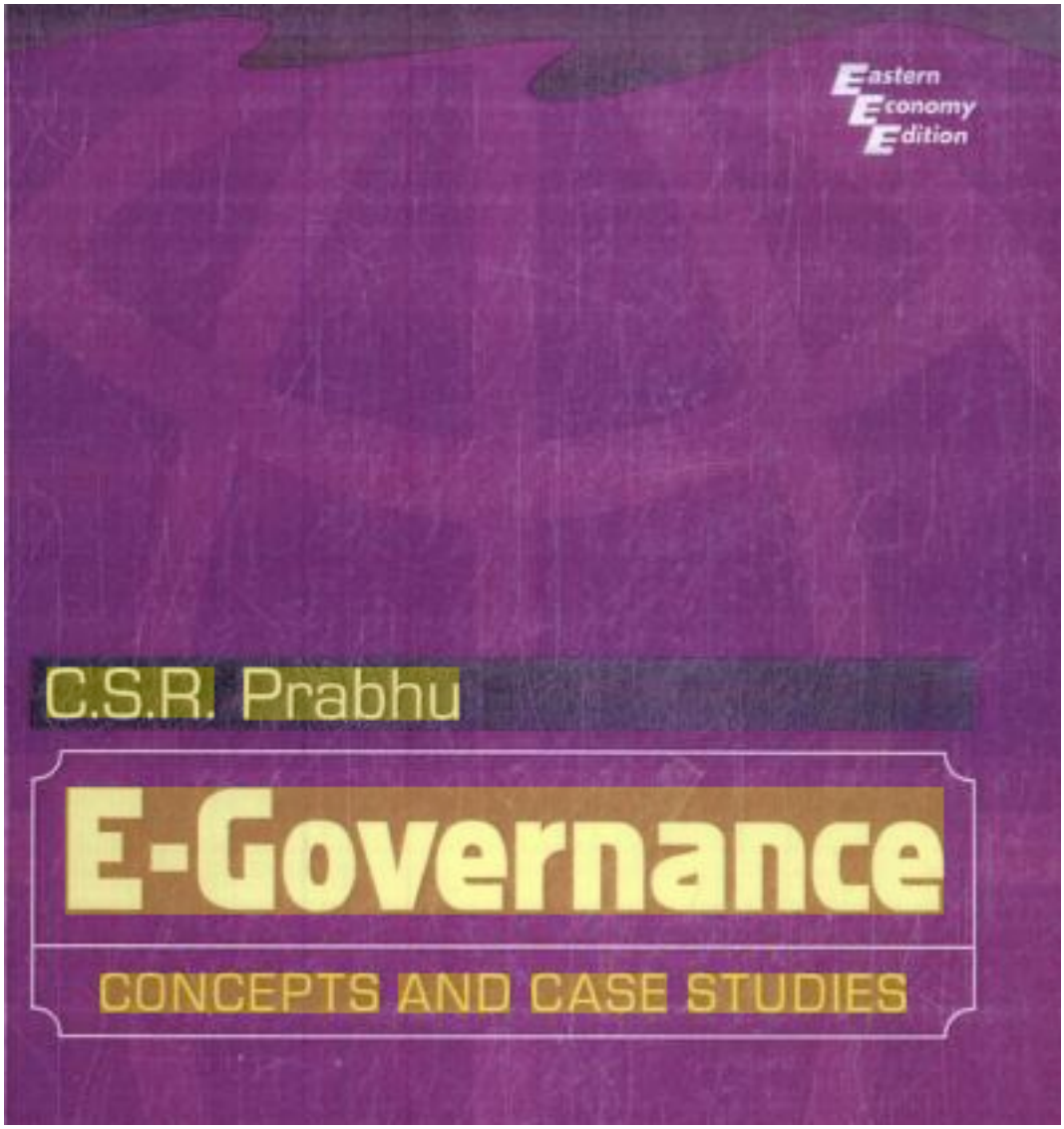
BOOK



E-Governance: Concepts and Case Studies
C.S.R. Prabhu

PHI

Unit 2. Models of E-Governance

Model of Digital Governance

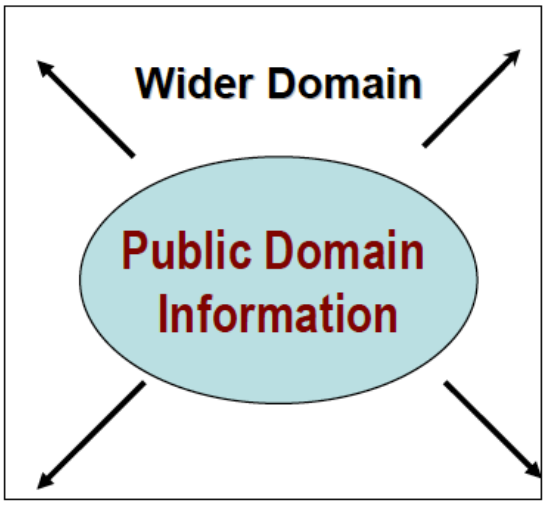
Models of digital governance are still evolving in developing countries. A few generic models have shaped up, which are finding greater recognition and are being replicated. These models are based on the inherent characteristics of ICT such as enabling equal access to information to anyone who is the part of the digital network and de-concentration of information across the entire digital network, connecting all sources of information. Information does not reside at any particular node in the Digital Governance Models but flows equally across all the nodes – a fundamental change from the more common hierarchical information flow model that leads to unequal distribution of information which skew power relations.

Hierarchy is inherent in the government departments. Equity based information flow may not be always compatible with government functioning. Therefore, appropriate administrative reforms and some reengineering may be required before e-governance may be really implemented. The models of governance are different in developing countries and developed countries due to difference in basic conditions and perspectives and expectations from good governance. The six generic models of digital governance in developing countries are:

- Broadcasting/ Wilder Dissemination Model,
- Critical Flow Model,
- Comparative Analysis Model,
- Mobilization and Lobbying Model,
- Interactive-service Model
- E-Governance Maturity Model

Broadcasting/ Wilder Dissemination Model

PUBLIC DOMAIN ➔ WIDER PUBLIC DOMAIN



Principle

The model is based on dissemination of information relevant to better governance that is already in the public domain into wider public domain through the use of ICT and convergent media. The rationale behind the model is that a more informed citizenry is able to understand better the governance mechanisms and is more empowered to make informed choices and exercise its rights and responsibilities. Further, there is a greater likelihood that the society in which the individuals are equally informed will ensure that the agenda and forms of governance are not biased to favour a few.

The wider dissemination model opens up an alternative channel for people to access information as well as validate information available in the local domain from external sources. The widespread application of this model gradually corrects the situation of information failure and provides people with the basic government-related information to come to a common understanding and decide upon the future course of action.

Applications

1. Putting government laws and legislation online.
2. Making available the names, contact addresses, e-mails, and fax numbers of local governmental officials online.
3. Making available key information pertaining to governmental plans, budgets, expenditures, and performances online.
4. Putting key court judgements/judicial statements that are of value to common citizens and creating a precedence for future actions online, viz. key environment related judgements, State vs Citizen court rulings, etc.

Evaluation

This model is the first step to more evolved forms of digital governance models. It is also the most crucial one as it catalyses free access and flow of information to all segments of society and serves as the building block to better governance.

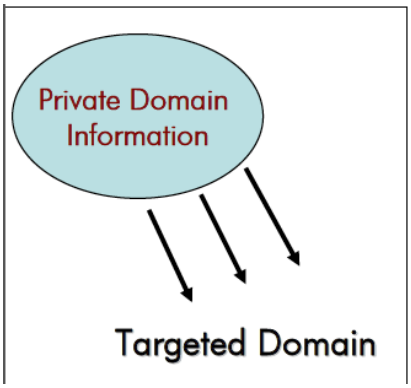
The model, however, loses its effectiveness where free-flow of information is not encouraged or is not an objective. Tight governmental controls and bids to censor the content being transmitted through this model would be the bane of the model. The onus is therefore both on governmental organizations as well as civil society organizations to ensure that such models continue to proliferate.

Organizations / Projects based on the Wider Model

- India
  - Directory of official websites of Government of India: http://goidirectory.nic.in/ministry.htm
  - National Informatics Centre (India) is the official website of the Government of India. It makes available information on government ministries- its projects and schemes, Indian laws and legislation, contact details of local government offices and key position holders online for public access.
- Brazil
  - Brazil's official national E-Government website: http://www.brazil.gov.br
  - The website provides comprehensive information on Brazilian government as well as links to integrated citizen services.
- South Africa
  - Chapter 2 Network: http://www.advocacy.org.za
  - The Chapter 2 Network is a clearinghouse of information and communication for social justice issues in South Africa. It provides information about advocacy campaigns, research on political intelligence, policy analysis and legislation monitoring to civil society organisations engaged in social justice advocacy.
- Global
  - Earth Negotiations Bulletin: http://www.iisd.ca/voltoc.html
  - A reporting service that keeps citizens around the world informed about global environmental negotiations, processes and decisions. It has immense value for people and government officials alike in developing countries to keep track of global negotiations taking place in the West and be more informed about them.

Critical Flow Model

Critical Private Domain ➔Wider Public Domain



Principle

The model is based on channelling information of critical value to a targeted audience or spreading it in the wider public domain through the use of ICT and convergent media. The model requires foresight to understand the significance of a particular information set and use it strategically. It may also involve locating users to whom the availability of a particular information set would make a critical difference in initiating good governance.

The strength of Critical Flow Model is the inherent characteristic of ICT that makes the notion of distance and time redundant. This reduces the cases of exploitative governance possible earlier due to time lag between availability of information to different users.

Applications

The applications involve making available

(a) information on corruption (by an appropriate legal authority) of a particular government ministry or government officials, to its electoral constituency or to the concerned governing body (e.g., the web sites of Central Vigilance Commission);
(b) research studies, enquiry reports and appraisals commissioned by the government to the affected parties;
(c) human rights violation and criminal impeachment records against government officials to NGOs and concerned citizens; and
(d) environment related information to local communities, for example, information on radioactivity spills, effluent discharge in rivers, green ratings of a company, etc.

Evaluation

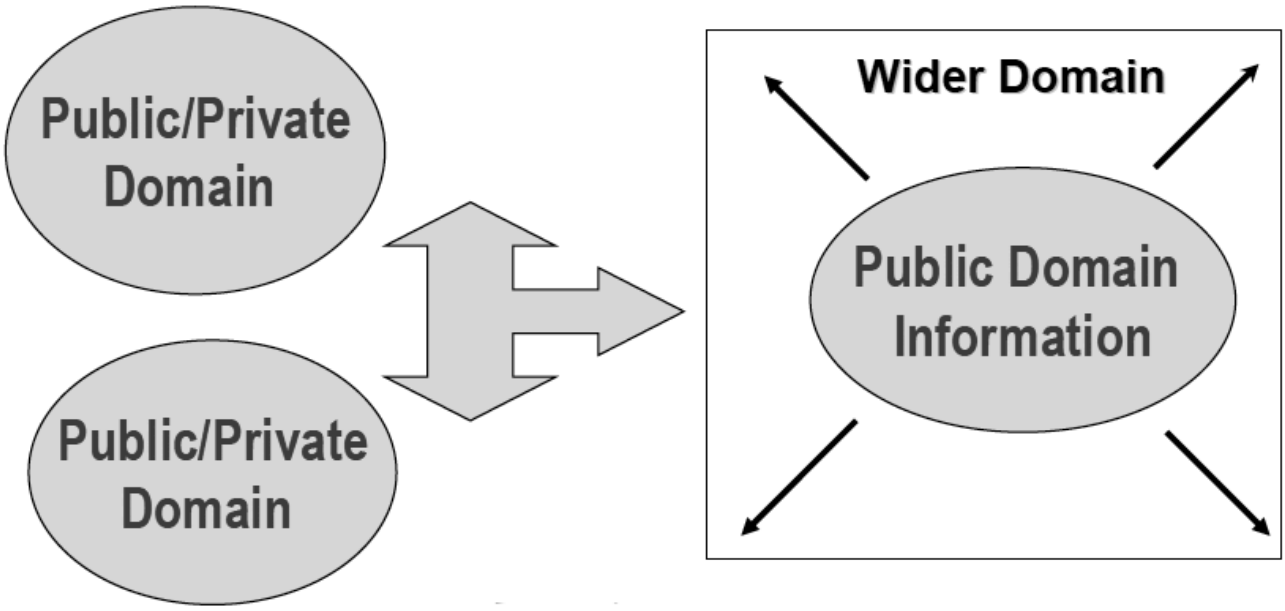
Critical Flow Model is more focussed in terms of its information content and its intended users. Due to critical aspect of information, the model exposes the weakest aspects of governance and decision-making mechanisms and informs people about specific cases of state failure and bad governance to build up a case for concerted action. At the same time, by fuelling public unrest, the model exerts pressure on the concerned government institutions and individuals to take into cognizance the interest and opinion of the masses in decision making processes. The onus of creating such models may lie more with the civil society organizations to emerge as an effective watch guard to government policies and actions. The model will not work in cases where government mechanisms do not foster public debates and censure all information of critical nature. It will also fail where the government maintains a tight control over all information. There it remains restricted to top few levels of the government. Inherently the Internet is an open medium. Thus, restricted dissemination is only typical—only those interested may use the critical and subject based information lodged on Internet web sites for public access (as indicated above) as applications.

Organizations / Projects based on Critical Flow Model

- India
  - Central Vigilance Committee (India): http://cvc.nic.in
  - An initiative on e-vigilance. The website provides free-access information to citizens about government officials who have been indicted on judicial charges relating to corruption and have been advised penalty. People can also file complaints against any public servant who fall within the jurisdiction of the Commission.
- Bangladesh
  - Human Rights Portal: http://www.banglarights.net
  - The Bangladesh Human Rights Network actively promotes human rights reforms both within Bangladesh and across geographical and political boundaries, and supports women, children, and marginalized communities in resisting social oppression.
- Global
  - Transparency International's Corruption News: http://www.transparency.org/press_moni.html
  - A trial service run by Transparency International called the "The Daily Corruption News" which reports on corruption from around the world.

Comparative Analysis Model

Private / Public Domain + Public / Private Domain → Wider Public Domain



Principle

The Comparative Analysis Model is based on exploring information available in the public or private domain and comparing it with the actual known information sets to derive strategic learnings and arguments. The model continuously assimilate new knowledge products and uses them as a benchmark to evaluate, influence or advocate changes in current governance policies and actions. The comparison could be made over a time scale to get a snapshot of the past and present situation (before-after analysis) or between two different situations to understand the effectiveness of an intervention (with or without analysis). The strength of this model lies in the boundless capacity of ICT to store information in a retrievable manner and transmit it almost instantaneously across all geographical and hierarchical barriers.

Applications

1. Guaging the effectiveness of current policies by gleaning learnings from government policies and actions of the past.
2. Establishing conditions of prior precedence, especially in the case of judicial or legal decision-making and use it to influence future decision-making. This could be useful in resolving patent-related disputes, public goods ownership rights, etc.
3. Enabling informed decision-making at all levels by enhancing the background knowledge and provide a rationale for future course of action.
4. Evaluating the performance record of a particular government official or ministry.

Evaluation

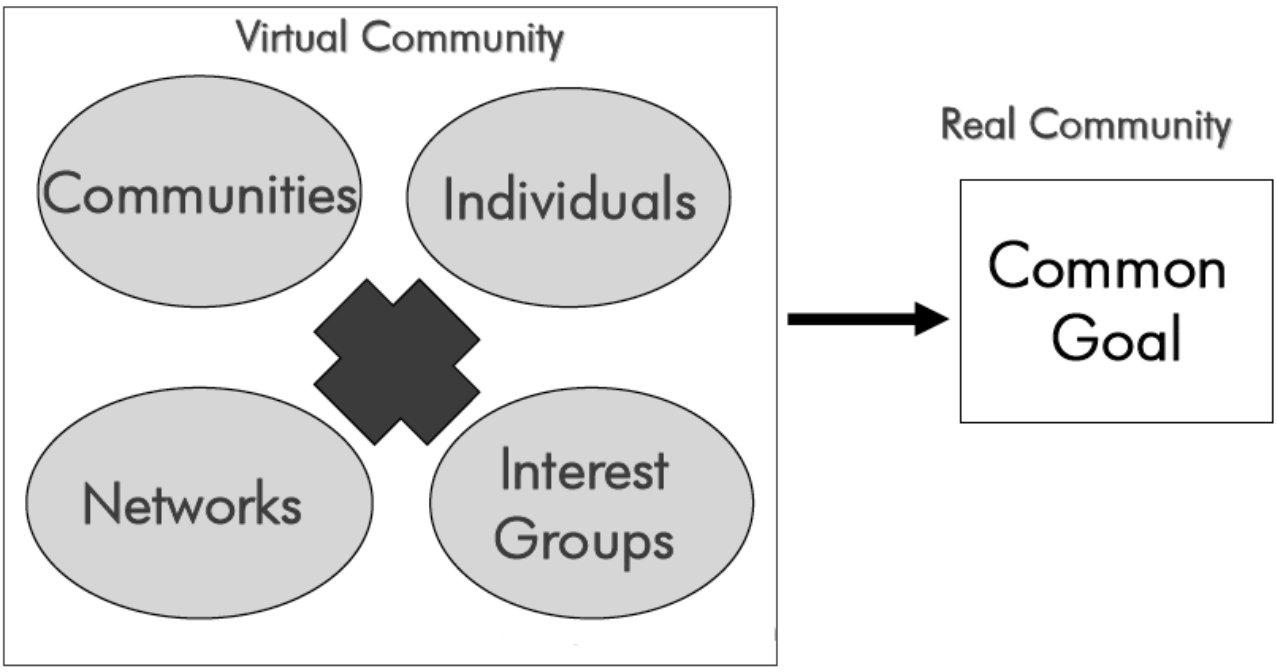
Developing countries can effectively use this model to their advantage as ICT opens access to global and local knowledge products at a relatively low cost. Watchguard organizations and monitor groups could use the model to track the performance records of electoral candidates and share them in their constituency. The model is, however, dependent on the availability of comparative information sets and the ability of the users to analyze and bring out strong arguments or self-explanatory graphics from the analysis. The model however becomes ineffective in the absence of a strong civil society interest and short public memory.

Organizations / Projects based on Comparative Analysis Model

- India
  - Green Ratings Project: http://www.oneworld.org/cse/html/eyou/eyou31.htm
  - The Centre for Science and Environment in India conducts a survey of how Green the Indian industries are. The Green Rating Project is an attempt to provide an independent and fair evaluation of the comparative environmental performance of companies, from a perspective which supports responsible industry and encourages poor performers to improve. Performance reports of companies are shared over Internet and other media and people's opinion is solicited in deciding the greenest environmental managers, Chief Minister etc.
- Philippines
  - Vote.ph: http://www.vote.ph
  - Vote.ph is the non-partisan, non-sectoral online directory and quick reference center on Philippine elected government officials and election candidates for both the national and the local levels. It serves the purpose of informing voters know who are the electoral candidates running in their respective area and who their incumbent elected officials are.
- Global
  - Human Development Indicators http://www.undp.org/hdro/indicators.html
  - The Human Development Report of UNDP makes use of archived statistical information pertaining to literacy, health, national income etc. as a benchmark to assess the progress made by different countries with regards to their Human Development Index and suggests policy recommendations based on that.

Mobilization and Lobbying Model

Building Allies / Network for rigorous action



Principle

Mobilization and Lobbying Model is one of the most frequently used digital governance models and has often come to the aid of civil society organizations in developing countries to impact international decision-making processes. The model is based on planned, directed, strategic flow of information to build strong virtual allies to strengthen action in the real world. It takes up the proactive approach of forming virtual communities which share similar values and concerns, promoting active sharing of information between these communities, and linking them with real-world activities.

The strength of this model is in the diversity of its virtual community, and the ideas, expertise and resources accumulated through virtual forms of networking. The model is able to effectively overcome geographical, institutional and bureaucratic barriers to shape concerted action. It also provides a strong virtual arm to several activities such as directing campaigns against a particular individual or decision-making body.

Applications

1. Fostering public debates on global issues, themes of upcoming conferences, treaties, etc.
2. Formation of pressure groups to pressurize decision-makers to take their common concerns into cognizance.
3. Amplifying the voices of marginalized groups such as backward classes or minorities who are traditionally marginalized from the decision-making process.
4. Encouraging wider participation in decision-making processes.
5. Developing global expertise on a particular theme in the absence of localized information to aid decision-making.

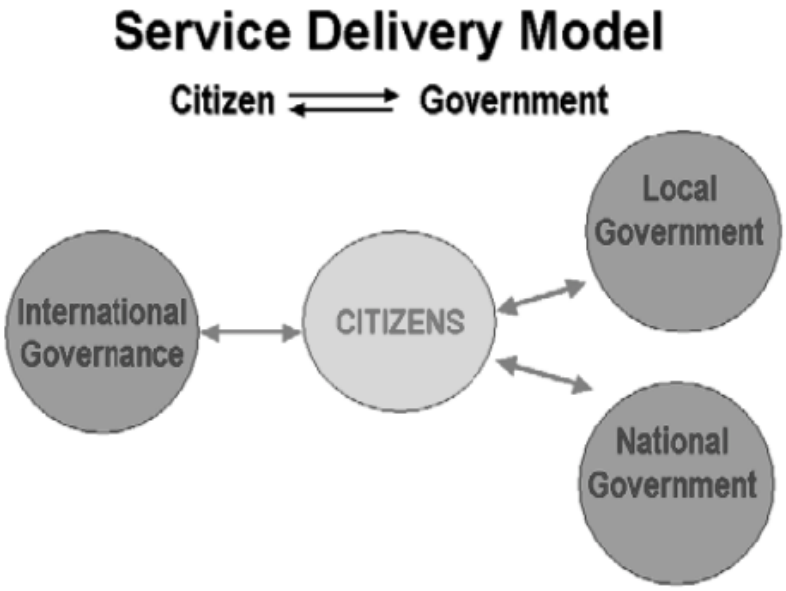
Evaluation

The Mobilization and Lobbying Model enhances the scope of participation of individuals and communities in policy issues and debates. The model also creates an effective deterrent for government bodies and individuals to be watchful in their actions lest they turn the opinion of local and global community against them. This model could be effectively used by the Government to encourage public debates and to gauge public opinion on a particular issue as a part of good governance strategies.

Organizations / Projects based on Mobilization and Lobbying Model

- India
  - Panchayats: http://www.panchayats.org
  - A discussion list run by Indian professionals to discuss policy issues and case-studies relating to local livelihood strategies and decentralised natural resources management. The participation is open and the list generates useful discussion between practitioners, activists and policy makers.
- Global
  - Independent Media Centre: http://www.indymedia.org/
  - The Center was established by various independent and alternative media organisations to provide grassroots coverage of WTO-Seattle in 1999. The Center acted as a clearinghouse of information for journalists, and provided up-to-the-minute reports, photos, audio and video footage through its website.
- Global
  - Greenpeace Cyber-activist Community: http://cybercentre.greenpeace.org//t/s
  - The Greenpeace Cyberactivist Community has members from more than 170 countries and territories. and is growing quickly. It is an effort towards creation of virtual communities to mobilise global support against some of the disputable environmental policies/ actions of the Government. Members receive email campaign updates, and can send letters to key corporate and political decision makers, download action kits, send e-cards to friends and colleagues, participate in on-line discussions, and play a significant role in helping to win environmental campaigns.

Interactive-service Model/Government-to-Citizen-to-Government Model (G2C2G)



Principle

Interactive-Service Model in many ways is a consolidation of the earlier digital governance models and opens up avenues for direct participation of individuals in the governance processes. This model fully captures the potential of ICT and leverages it for greater participation, efficiency and transparency in the functioning of government as well as savings in time and costs relating to decision-making.

The Interactive-Service Model makes possible various services offered by the government to be directly accessible to citizens. It creates an interactive Government-to-Consumer-to-Government (G2C2G) channel in various functions such as election of government officials (e-ballots), filing of tax returns, procurement of government services, sharing of concerns and providing expertise, conducting opinion polls on public issues, and grievance redressal.

Applications

1. Establishing an interactive communication channel with policy-makers such as videoconferencing and online dialoguing.
2. Conducting electronic ballots for the election of government officials and other office bearers.
3. Conducting public debates/opinion polls on issues of wider concern before formulation of policies and legislative frameworks.
4. Filing of grievance petitions, feedback and reports by citizens with the concerned governmental body.
5. Performing governance functions online such as revenue collection, filing of taxes, governmental procurement, payment transfers, etc.
6. Carrying out videoconferencing, and online discussion with policy makers.

Evaluation

This model is more embedded in e-governance initiatives in the developed countries and has often been proposed for implementation in developing countries. Such forms of solution transfer may not be very effective. The model is on the higher end of technology reliance as compared to the other models. This makes it difficult to replicate in developing countries in the absence of individual and secure ICT access. Various other issues also need to be considered carefully before such blind duplication can be attempted in the developing countries. However, the trend is definitely in this direction and sooner or later, this model will be implemented in all the countries with due modifications for local adaptation.

Organizations / Projects based on Interactive-Service Model / G2C2G

- Philippine
  - Philippine Custom Reform:
  - http://www1.worldbank.org/publicsector/egov/philippinecustomscs.htm
  - The Philippines Customs Bureau has developed an on-line system to process clearance of imports, payment of duty, and delivery of release orders for shipments to leave the docks. The new on-line system has lessened the cost of trade for businesses, reduced opportunities for fraud, and helped the Bureau to maximise revenue collection.
- India
  - Gyandoot: http://www.gyandoot.net/gyandoot/intranet.html
  - Gyandoot is an intranet in Dhar district of Madhya Pradesh connecting rural cybercafes catering to everyday needs of the masses. The site offers several interactive governance related services to the local people such as providing copies of land-maps, online registration of applications, and public grievance redressal. It is a step towards tele-centre based e-governance models.

E-Governance Maturity Model

Evolution

The E-Governance Maturity Model (EMM – 1.0), based on the conventional software maturity models, proposes some levels of maturity, depending on the effectiveness with which the e-governance efforts have been initiated, implemented or successfully complete. The model also provides for identification of key focus areas that need to be concentrated for attaining a specific maturity level.

	Level 1: Simple Website	Level 2: Online Government	Level 3: Integrated Government	Level 4: Transformed Government
Attributes	Static pages Lists of departments and contact information Links to separate departments Policy statements Downloadable forms and documents Access primarily via telephone No site reporting, tracking or analysis	Departmental focus Online forms for applications and registrations Online payment Request information or service via email Respond to online surveys Limited online help, FAQs, resolution services Basic account inquiry Basic benefits enrollment	End-to-end electronic transactions Automated RFP and procurement process Cross-departmental sharing of information Automated advice and problem resolution data Limited configuration capabilities Self-service HR administration Web-based training	Community-centric, integrated, intergovernmental processes Common platform for targeting content through any channel/touch point Internal/external business process integration and collaboration (planning, workflow, design) Constituent case tracking to ensure resolution and satisfaction Highly configurable HR (benefits, career planning, development training)

Traditionally, e-governance has been defined as an ICT enabled route to good governance with a view to enhancing transparency in the system and provide prompt and quality services to the citizen. E-governance is an evolutionary path, whose effective implementation requires a complete understanding of its various elements and at the same time taking a holistic view to stay focused on its overall objectives.

E-Governance journey encounters several milestones that need to be identified and modeled so that efforts invested can be assessed and an appropriate course of action are taken by the organization to further its way on the path of e-governance. The E-governance Maturity Model (EMM – 1.0) proposes 5 levels of maturity, depending upon the effectiveness with which the e-governance efforts have been initiated, pursued, utilized and institutionalized. EMM 1.0 will facilitate government organizations to assess the current level of e-governance initiatives and accordingly make efforts for the future. The model further identifies the characteristics exhibited by organizations at various levels of maturity that will facilitate correct assessment of the current status. The model also provides Key Focus Areas that need to be focused on to attain a particular maturity level.

Five Maturity Levels

The E-governance Maturity Model (EMM—version 1.0) is based on the fact that speed, openness and ubiquity are some of the major capabilities of ICTs, which can be leveraged for generating transparency, responsiveness and accountability in the system, on the one hand and empowering the common man by providing faster access to right information at the right time, on the other. It is also based on a service-oriented approach, where public administration is seen as a professional activity and efficient delivery of services to the internal and external users (customers) is emphasized as a key performance indicator of the government department. The internal customers/ users of an organization are its employees and the external users are the citizens, businesses, other government and non-governmental bodies that the organization needs to satisfy in its e-governance endeavour. However, there may exist organizations that are performing well even without ICT application to its functions. Even such organizations may gradually take up to ICT for the sake of other reasons and other benefits.

The maturity levels, described below, provide a necessary mechanism to benchmark the efforts invested by an organization in implementing e-governance and subsequently sustaining it to the satisfaction of its customers/ users.

Level 1: Closed

This is the stage when an organization does not use ICT as a facilitator for good governance and has no plans to do so in the near future. This situation may arise due to lack of exposure to ICTs and associated benefits that again may depend upon a number of reasons; remoteness from the mainstream in terms of location is primary, and lack of resources and strategic thinking could be some of the other issues. As a result, the organization is 'closed' in terms of being connected and sharing of information in the context of "e"-governance. However, even in this condition the organization may be efficiently functioning. Given the trend today, all organizations may take up ICT implementation sooner or later.

Contd. ...

Level 2: Initial

This level corresponds to the stage when an organization has initiated the automation of its processes but on a ad-hoc basis. No organized efforts are made to undertake the e-governance initiatives. Also, due to lack of direction many such e-governance efforts are abandoned at a subsequent date.

Level 3: Planned

The e-governance initiative, at this level, is undertaken with a systematic approach. The organization has a clearly defined vision, objectives and goals for e-governance. A need assessment study is conducted to prioritize areas of implementation and gauge the extent of e-readiness. Taking input from the need assessment study, extensive planning has been carried out indicating policies, strategies, various activities, stakeholders, roles and responsibilities and resources required in terms of time, money and manpower to undertake the e-governance exercise. However, the organization is yet to enter into the planned implementation of the e-governance exercise, even though all the requisite planning is completed.

Level 4: Realized

This level corresponds to the stage when the organization actually realizes the complete e-governance plan. Consequently, an integrated system is established where all the internal processes of the organization are computerized and there is a seamless information exchange among all concerned entities. The organization starts delivering the services to its external as well as internal customers/users in an effective manner.

Complete realization of the plan, in a single instance, would entail enormous amount of resources in terms of time, money and manpower, which may necessitate adopting a phased approach for operationalizing the e-governance services. Accordingly, a further classification within this level has been proposed that measures the extent of realization of the plan over a period of time. These sub-levels are also indicative of the openness and effectiveness with which the information is exchanged among the various entities of the organization (external and internal).

Contd. ...

(a) **Retrospected.** At this level, the organization has retrospectively studied its business processes in view of its vision, overall e-governance objectives, the service-oriented approach (wherein government is expected to effectively deliver the services to its customers/users), and changes, if required, in the processes are initiated as a constant evolutionary process.

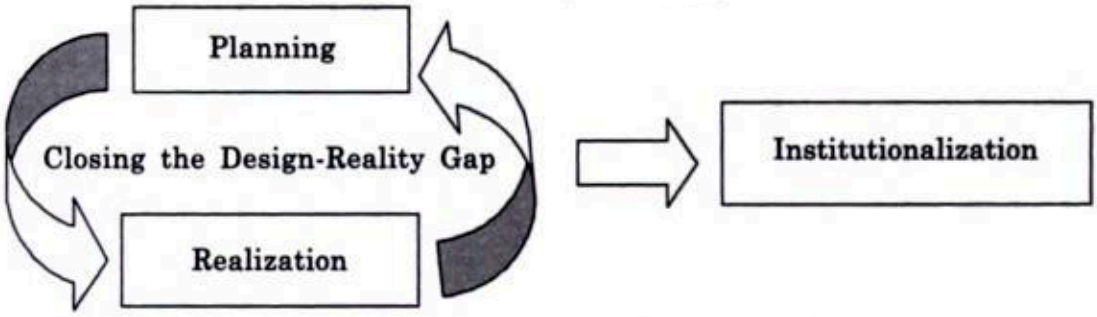
(b) **E-ready.** In this stage, e-readiness essentials,* which are also the building blocks for e-governance, are ensured by the organization.

(c) **Partially open.** At this stage some of the e-governance services are operationalized resulting in a partial information exchange among the entities, both within and outside the organization.

(d) **Open.** This sub-level of realized state implies complete deployment of e-governance services that ensure an integrated system that is open to information exchange. The focus here shifts from acquiring and implementing "e" enabling factors to effectiveness with which the services are delivered. The system gains responsiveness to deal with the customer needs and is accountable for its services.

Level 5: Institutionalized

At this level, the organizations sustain the realized state over a period of time so that e-governance becomes part of its work culture. The e-governance services are effectively utilized and accepted by the users. Several iterations between planned and realized state lead to institutionalization, when e-governance becomes a way of life



Reaching the Institutionalized Stage.

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Following define the e-readiness of an organization:

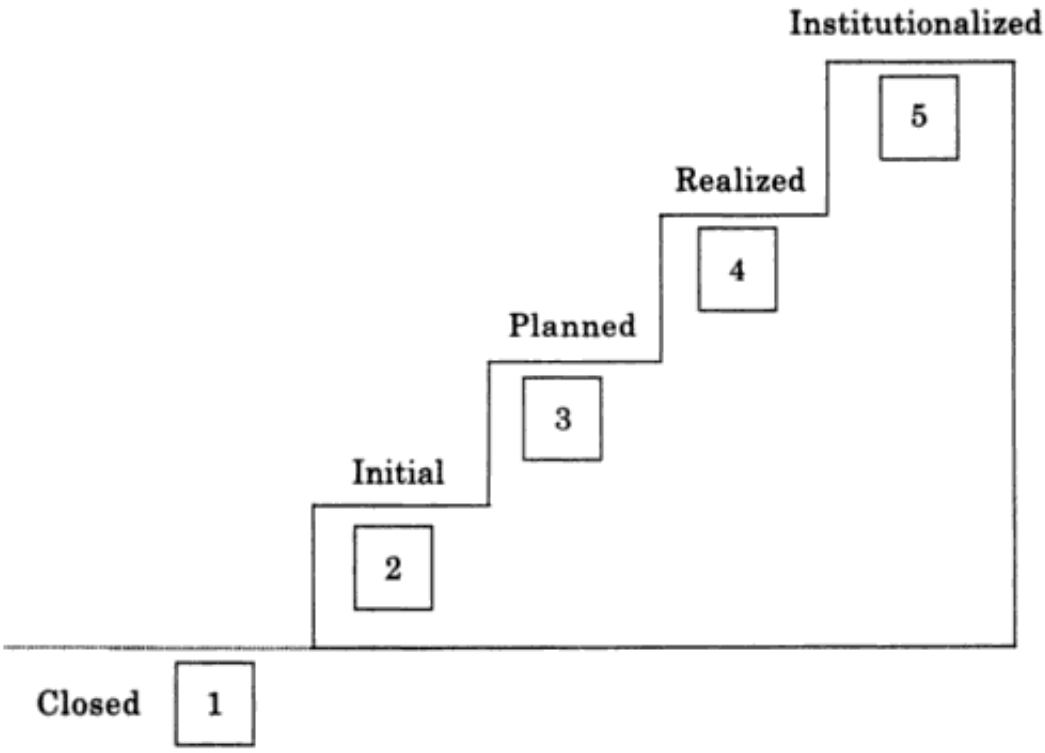
(a) **Presence of strategic thinking, leadership and commitment among top-level decision makers.** It is necessary to have visionaries at the top level who can put e-governance on the agenda of the organization and are able to carry it through to implementation and effective utilization.

(b) **Institutional infrastructure.** There should also be institutions responsible for creating e-governance awareness among stakeholders and users, and coordinate the e-governance exercise.

(c) **ICT infrastructure.** A sound computing and communication infrastructure is an essential requirement for effective operationalization of e-governance services.

(d) **Human capacities.** It is important to build human capacities in terms of necessary knowledge and skills to initiate, implement and sustain e-governance initiatives. It is equally important to generate right attitude that is receptive to ICT based administration and ICT based delivery of services. All require extensive and intensive training and ICT orientation programmes at various levels of the staff and officers in the concerned government organization.

(e) **Legal infrastructure.** The necessary laws and regulations should also be in place to support ICT as a tool for good governance.



E-Governance Maturity Levels.

Characteristics of Maturity Levels

The characteristics exhibited by the organizations at various levels of maturity facilitate assessing the current level of e-governance attained by an organization. The following sections describe the characteristics of the organizations at various levels:

Level 1: Closed

- Organizations are closed to e-governance. No plans or vision is available. They continue with fully manual and conventional operations.

Level 2: Initial

- Organization lacks strategic thinking and direction for e-governance at top level.
- There are unorganized and isolated efforts of automation in some areas.
- Automation efforts are a result of individual's initiatives.
- The effort sustains as long as the enthusiasm of the individual, who initiated it, remains and is often abandoned due to lack of direction.
- Such organizations generally accumulate hardware without any planning and much of it goes unutilized or underutilized.

Level 3: Planned

- E-governance is a part of organization's agenda.
- Strategic thinking and leadership guide the e-governance initiatives.
- Clear understanding of e-governance needs as projected by the external and internal customers/users.
- Extensive plan is prepared for implementing e-governance, addressing all Key Focus Areas (KFAs) and other related issues.
- All the necessary documents for e-governance planning are in place. These documents include Vision and Scope document for e-governance, Need Assessment Survey document, Policy guidelines, Action Plan and Outsourcing guidelines.

Contd. ...

Level 4: Realized

(a) **Retrospected.** (i) Business processes are attuned with the vision and overall e-governance objectives.

(ii) There is awareness about e-governance among all concerned—the stakeholders as well as the customers/users.

(b) **E-ready.** (i) The organization has a sound infrastructure (technological, institutional, legal and human) in place, for implementing e-governance.

(ii) The customers/users are oriented and motivated to use e-governance services.

(c) **Partially open.** (i) Some of the e-governance services are deployed, leading to partial information exchange among the entities.

(ii) Partially open organizations sometimes focus only on their internal or backend processes, allowing an information exchange within the confines of the organization thus remaining insulated from its external entities. In such cases, Government-to-Employee (G2E) interface is visible, whereas Government-to-Citizen (G2C), Government-to-Government (G2G) and Government-to-Business (G2B) interfaces are not yet established.

(iii) Another case of partial deployment of e-governance services results in a conspicuous G2C interface with no emphasis on building G2E, G2B or G2E interfaces. In an enthusiasm to quickly open up its front-end, the organization negligibly focuses on computerization of the supporting backend processes, thus creating hollowness behind the face of static web sites.

(iv) A hybrid of the above two cases is characterized by building interfaces with external entities and simultaneously focusing on computerizing the corresponding backend processes, thus opening a balanced information exchange among the internal as well as the external customers of the organization.

Contd. ...

(d) **Open.** (i) The organization has an integrated system, reflective of smooth information exchange within and outside the organization, i.e. Government-to-Employee (G2E), Government-to-Citizen (G2C), Government-to-Government (G2G) and Government-to-Business (G2B) interfaces are well established over a sound foundation of e-governance building blocks (the e-readiness essentials).

(ii) Organization focuses on satisfying the users of e-governance services.

(iii) The internal and external customers/users of the organization start utilizing the e-governance services and become dependent on them.

The necessary documentation for each of the activities under the e-governance exercise is in place (User Requirement Specifications, Software Requirement, Specifications, Design, Test cases, Training modules, Users Manuals, Maintenance guidelines and Impact analysis document).

Level 5: Institutionalized

(i) The e-governance system of the organization is driven by a well established Knowledge Management System that generates an ability in the organization to evolve with time in view of new requirements.

(ii) E-governance becomes an effortless exercise for the organization and it becomes a way of life for the stakeholders and customers/users.

(iii) The organization at this level is completely paperless.

Key Focus Areas

Key Focus Areas (KFAs) indicate the areas that need to be focused by an organization and are a set of related activities when performed collectively, help achieving a particular level of maturity. KFAs are defined from level 3 (Planned) onwards, as this is the stage from where e-governance effort is systematically attempted.

Planned

- Define a quantifiable vision for the e-governance exercise.
- Conduct a Needs Assessment Survey in view of objectives covering the following areas:
  - — Survey of requirements both within and outside the organization, indicative of the information needs of the internal (employees) and external (citizens, business and other government agencies) customers/users with respect to e-governance.
  - — Analyze the requirements to identify priority areas for initiating e-governance exercise.
  - — Assess the extent of e-readiness for identified areas and requirements to achieve the desired level of e-readiness.

- Prepare an extensive plan on e-governance that includes the following areas:
  - — Define objectives and goals for the e-governance exercise.
  - — Design policies and strategies for implementing e-governance.
  - — Decompose the e-governance exercise into various activities.
  - — Project the resource requirements in terms of time, money and manpower.
  - — Identify stakeholders and assign roles and responsibilities.
  - — Define implementation methodology.
  - — Define measures for creating awareness and change in mindset among the external and internal customers/users of the organizations for effective implementation of e-governance.
  - — Define measures for attaining required level of e-readiness.
  - — Identify risk factors and propose risk mitigation plan.
  - — Define the expected impact and propose an impact assessment methodology.
  - — Identify external sources of funds, if required.
  - — Define mechanisms (Research and Development, Knowledge Management initiatives) for developing innovative ways of delivering services within the organization and outside it.
  - — Define the time for which the plan is valid.
  - — Prepare all the necessary documentation including Vision and Scope document for e-governance, Need Assessment Survey document, Policy guidelines, Action Plan and Outsourcing guidelines.

Realized

- Arrange for resources required to implement the e-governance initiative.
- Develop a high level awareness and commitment among decision-makers, stakeholders and users to initiate and carry forward the e-governance objectives.
- Select vendors for outsourced activities and formalize terms and conditions with all the stakeholders, clearly assigning roles, responsibilities and ownership.
- Set up management committees with appropriate representation of all stakeholders for executing and monitoring the e-governance exercise.
- Conduct a detailed study and review of the existing business processes in view of e-governance objectives.
- Initiate the change in business processes wherever required, and bring in suitable legislation to make it effective.
- Acquire and/or design, develop, test and deploy e-governance services with the following issues in mind:
  - — Address information needs of common man in local language with easy to use interface.
  - — Address the issues related to standardization of content and data to facilitate seamless flow of information among concerned entities.
  - — Ensure interoperability in terms of interconnectivity, data integration and information access.
  - — Use open standards.
  - — Ensure easy accessibility to information.
  - — Provide efficient data communication.
  - — Build scalable architecture.
  - — Ensure wide market support (supply from multiple vendors).
  - — Ensure wide product support (interconnection between products from diverse vendors).
  - — Ensure cost effectiveness.
- Conduct extensive training for customers/users and administrators for effective operationalization and utilization of e-governance services.
- Collect, compile, validate and update data/content.
- Maintenance activities.
- Conduct an Impact Analysis to assess the effectiveness of service delivery.
- Initiate activities (surveys, research and development, knowledge management initiatives) to devise more innovative ways of developing and delivering e-governance services.

Institutionalized

- Address the *design-reality* gaps, if any, by iterating between planning and realization phases.

- Evolve a mechanism (knowledge management system, research and development initiatives and surveys) to make e-governance an effortless exercise so that the entire system develops an ability to evolve and scale up with time and new requirements.

Towards Good Governance through E-Governance Models.

The digital governance models bring about a transformation in the existing forms of governance as they change the nature of citizen-governance relationship and bring in new agents and mechanisms to influence the governance processes. They foster democratic control over the governments' economic, social and welfare policies by citizens and civil society organizations—a key process requirement for good and responsive governance.

The changes brought about in the citizen-governance relationship through digital governance are fourfold:

1. They open up avenues for flow of information both vertically and laterally to encompass a wider foundation of the civil society. A greater density of information flow is achieved between government and civil society, or within civil society itself. The right to voice and expression gets gradually embedded among citizens through digital means.
2. Information becomes difficult to be capitalized by a few for political gains at the expense of ignorance of citizens. The power equations shift from being concentrated at select nodes to its even distribution among citizens, opposition parties and watchguard groups.
3. There is a greater scope to influence policy-makers and members of civil society through collective opinion, direct participation, participation in public debates and use of advocacy tools.
4. Policy-makers become more aware of the voices of people and can effectively involve them in policy-making mechanisms. They realize that their actions are under the scrutiny of many more watchguard organizations and there are greater avenues available with people to obtain any information. Information also becomes difficult to obliterate and is forever archived to increase the institutional memory of society.

It may, however, be noted that all these features described are applicable only to well established democracies with sound systems in place. This criterion may not be applicable to many developing countries and even some developed countries.

The widespread application of digital governance models synergizes representative forms of democracy with direct participatory forms. This becomes possible because information earlier residing with citizen's representatives in the governance domain is now available with the citizens themselves. People are therefore more aware of the political issues which interests them, and also about the implication of the actions made by their representatives.

This form of informational egalitarianism creates an effective watchguard system where people watch those who are supposed to guard their interests in the governance mechanisms. This can potentially catalyse popular democracy at local, regional and national levels.

People's Participation in ICT-Enabled Governance

	Conventional media	*ICT and convergence media*
Mode of participation	Representative of *ex-situ*	Individual/Collective *in-situ*
Form of participation	Passive/Reactive	Pro-Active/Interactive
Impact of participation	Indirect	Direct/Immediate

As seen from the comparison chart, the involvement of people in ICT-enabled governance mechanisms is significantly different in comparison to traditional forms of governance. The mode of governance transforms from "representative" to "individual based" and from "passive" to "proactive". People are no longer totally dependent on information provided to them by their leaders or policy-makers through conventional media to form an opinion about the issue. They are able to capitalize on different sources of information and can proactively enter into a dialogue with the decision-makers on issues of interest to them.

Since ICT-enabled governance models can directly connect individuals with officials in the government and decision-makers, the impact is immediate, and puts greater access and control over governance mechanism in the hands of individuals. Spaces therefore get created within the existing governance mechanisms that would be democratically informed by citizen's voice. This process makes the government more responsible and accountable to its citizens.

Digital governance models bring with them the potential to bring in far-reaching changes in governance structures in developing countries. The approach to it however has to be cautious and well thoughtout. Simple replication of popular e-governance models of the developed world in the developing world will not be effective and may end up marginalizing people who are on the wrong side of the digital divide. Local needs and priorities should guide the selection and nature of implementation of e-governance models in an evolutionary manner.

Creativity lies in the use of information and blending it with the potential offered by ICT to create customized low-cost digital governance models. Solutions may often emerge by analysis of reasons behind governance failures by the people themselves and then imaginatively using digital governance models to focus on the weakest spot to bring gradual improvements in governance. Small successes are significant landmarks in the path of transformation to good governance.

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E-Governance (CSC-307)

BSc. CSIT 5th Semester

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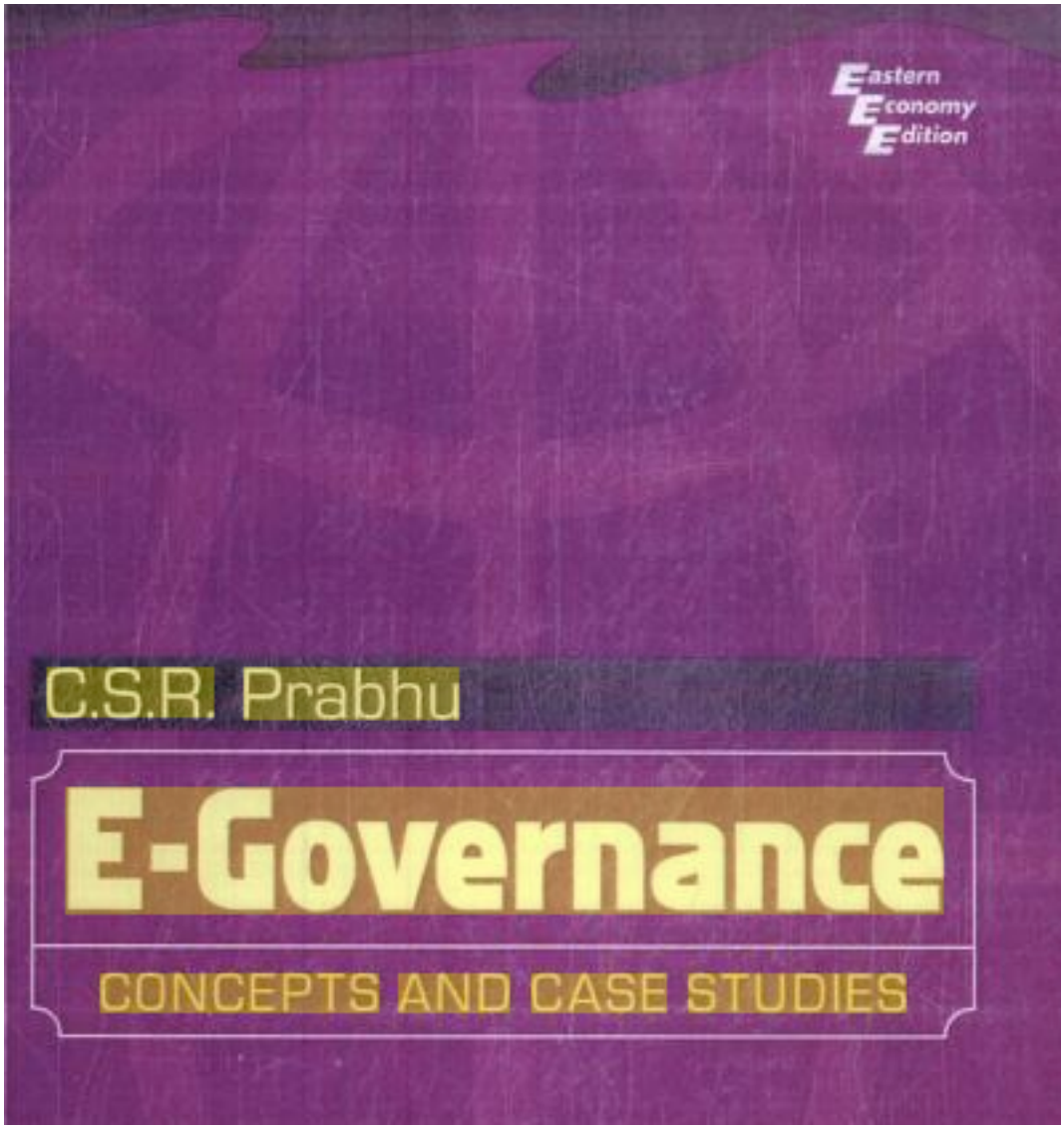

E-Governance: Concepts and Case Studies
C.S.R. Prabhu

PHI

Unit 3. E-Governance Infrastructure and Strategies

While e-governance is a reality beyond hype in developing countries, a fact usually not understood is that many e-governance initiatives fail before they are well entrenched on a permanent and sustainable basis. With the proper infrastructure and strategies we need to answer following questions:

- What are the reasons behind high mortality rate of e-governance?
- What are the pitfalls and bottlenecks?
- What is the solution for this?

E-readiness

Developing countries face serious constraints and limitations or challenges to fully adopt e-governance. All these are related to the e-readiness of the country i.e. its readiness for e-governance implementation. E-readiness means the infrastructural pre-requisites for taking up any e-governance initiative. These infrastructural prerequisites or preconditions may be identified as:

- Data System Infrastructure Preparedness
- Legal Infrastructural Preparedness
- Institutional Infrastructural Preparedness
- Human Infrastructural Preparedness
- Technological Infrastructural Preparedness
- Leadership and strategic planning

Data System Infrastructure Preparedness

The core of e-governance is e-MIS, the electronic Management Information System. This implies the databases being ready and usable in such e-MIS, as data is the core of MIS. Whatever data conventionally was being procured and maintained manually needs to be computerized or brought into electronic form. This means the preparation of computerized MIS and databases or, in some cases, data warehouses required in e-governance. Data quality and security is extremely important. Usually, in most government environments in the developing world, these infrastructural arrangements are not up to the mark. The fundamental question that can be asked before implementing any e-governance application is: Are all the requisite management information systems, records, databases and work processes in proper place so as to provide the quantity and quality of data to support the move to e-governance? If not, these have to be built up with great effort and patience—This is the core of computerization activity of any government process. It may take several years to reach this stage.

Legal Infrastructural Preparedness

The efforts put in computerization, as described above, result only in automation of the existing manual processes and procedures. The manual processes and procedures in government are usually obsolete, inefficient, bureaucratic and red tape based. Some developing countries still continue their obsolete colonial practices in government. This means that by computerizing the same existing inefficient manual practices and systems we will continue to have poor and inefficient performance, though at a higher speed, by computerization. It is also due to lack of administrative reforms and lack of business process reengineering. It is also due to lack of requisite legislation and legal infrastructure to enable such reforms or reengineering of the existing inefficient, or obsolete business practices and procedure or rules and regulations within the government at various levels. This problem is more accentuated in the developing countries, some of which still have their colonial hangovers. In the developed countries, especially the smaller ones, administrative reforms and reengineering have been significantly successful. In the developing countries too, this has begun to some extent and the future holds hope for this as to enable effective e-governance implementation in these countries.

The fundamental question that needs to be answered in the affirmative before any successful e-governance institution is taken up is: Are the laws and regulations required to permit and support the move towards e-governance initiatives in place? For example, digital signatures are not yet accepted in many countries which lack the appropriate law for this. The Information Technology Act (IT Act) in India, essentially provides an appropriate legal infrastructure for the use of digital signature. The public key infrastructure is being given the legal sanction and support before it can be implemented. Apart from these statutory laws pertaining to IT, individual legal acts and legislation may be required for enabling smooth and successful implementation of specific e-governance initiatives (e.g., the legal acceptance of a computer printed document). Many countries have legislated the IT Act (as in India) which needs all there requirements.

Institutional Infrastructural Preparedness

For any government to implement successful e-governance projects, the requisite institutional infrastructure has to be in place. Most governments do not have any. For example, in India the Government of India established National Informatics Centre (NIC) as an apex institution at the national level for catalyzing and coordinating all e-government activities and projects in any government body at the Central, State and District levels. Similarly, many State governments in India have established their own Information Technology Departments which are basically coordinating facilitators for e-government projects within the State.

However, many countries or states still lack this institutional infrastructure. The activities of such institutes are varied from hardware selection and procurement to networking or software development and implementation and also training of the staff at various levels of the government.

Human Infrastructural Preparedness

An institutional infrastructure provides training facilities in addition to other resources. Human resource development by training is an essential requirement. Human infrastructural preparedness comes from well-trained manpower, both technical and non-technical. The technical manpower resources are essential for all the phases of e-governance and related information system life cycle comprising systems analysis, systems design, programming, implementation, operationalization, and documentation. The national public IT infrastructural institutions (such as National Informatics Centre) for e-governance provide manpower for all such activities. Besides, the private corporations also play a major role in this regard in many e-governance activities. In addition to the requisite technical human infrastructure for software development and implementation of e-government projects, there is need for the crucial training and orientation of user personnel, i.e. government staff in e-governance projects. The government employees and staff who are the stake-holders in all e-government projects as the end users and operational users of such projects, are required to be appropriately trained and oriented for change management from a manual government environment to e-governance environment. Only after such training will they be competent and capable of handling such e-governance projects and operational environments. They also play a crucial role in various phases of e-governance information system life cycle in the phase of systems analysis and operational usage.

Technological Infrastructural Preparedness

Technology is fast changing in ICT domain. Rapid obsolescence of hardware and software and the maintenance and support they require results in great financial demands from time to time. Government organizations encounter this situation especially as their procedures to procure hardware, software, etc. are highly inefficient and delayed.

In the case of developing and underdeveloped countries, the latest technological infrastructure including computing and telecommunication is conspicuous by its absence. As a result, software and hardware also may not be compatible or efficient. The reasons are too many—cost of technology, adaptability, obsolescence, so on and so forth. This is a serious limitation for e-governance implementation. Innovative solutions to solve the problem of funding are being explored by these countries. The new technology domains as fibre optics enable low cost Internet bandwidth. Some countries are also making plans for broadband Internet access.

Evolutionary Stages in E-Governance.

E-governance evolves gradually from the simplest levels to advanced levels. The evolution may not be the same in all cases. Several stages of evolutionary progress could be identified. The following stages of e-governance can definitely be perceived in any government department or government organization:

Stage 1. Use of e-mail and setting up of internal networking
Stage 2. Creation of Intranets infrastructure for access of internal activities
Stage 3. Allowing public access to information through Internet
Stage 4. Allowing two-way interactive communication with stake-holders to enable Internet enabled transactions (including financial transactions)
Stage 5. Allowing online transactions by the citizens
Stage 6. Enriching digital democracy
Stage 7. Electronically integrated or joined government with Legislature and Judiciary.

Stage 1: Use of e-mail and setting up of internal network

The most fundamental, cheapest and easiest ICT tool is e-mail. E-mail has now become common in all urban areas and some rural areas. Within the government it is the easiest of all options available for implementation. Official orders to accept e-mail communication as valid have been issued in a large number of government, judicial and legislative organizations. Although e-mail can reach outside organizations via the Internet, most government organizations adopt e-mail for internal messagings.

Due to its informality, e-mail can lead to increased lateral and bottom-up communication.

E-mails break the official hierarchy of communication, as anyone can send to e-mail to any other, breaking the hierarchy and other barriers. They allow person-to-person communication can improve information sharing, exchange, coordination and feedback of information.

However, its limitations are its transparency and security risks of the content, unless used with digital signatures or key encryption. Sensitive and critical messages are still best sent over the telephone or in person. However, with the advent of digital signatures and encryption techniques, it is possible to ensure integrity, security, correctness and non-repudiation of the information sent as e-mail.

The internal networking of various departments of an organization linked to Internet for sending and receiving the e-mail is a prerequisite. Most government organizations have already set up desktops in various divisions and sections and internally connected them all for this purpose.

Stage 2: Use of Internet by connecting internal activities to Internet

While e-mail provides the very fundamental mode of communication, the basic and personal use of Internet from offices and houses is now generally a reality in all urban areas and limited rural areas. Surfing of the web is both a business and pleasure. It has been noticed that most government employees spend a few hours a day surfing the Internet whether for official purpose or personal benefit, or for pleasure. The Internet has inculcated an information culture in the people in general and government employees in particular, to surf the Internet, in general, for all purposes of information retrieval. Thus, all sectors of the government such as Agriculture, Finance, Economy, Planning, Rural Development, etc. can be found to have their presence on the Internet in a significant scale and any government activity regarding any information such as policy statements, strategies, technological or scientific information can be obtained from the Internet for the benefit of all levels of people involved in government. For example, the Andhra Pradesh Chief Minister's Office has set up a group of technical and administrative staff only to research and retrieve information from the Internet from time to time to prepare reports and presentations. Similarly, the office has also set up an official web site giving all activities of the Chief Minister and summary of government activities.

Stage 3: Allowing public access to information

Public access to information can be viewed in multiple dimensions.

(a) **Web pages, citizen charters and application forms.** If the government department concerned puts up a web page on the Internet, describing all functions of the Department, it can be accessed by citizens and general public interested. This may be usually static data—the Internet equivalent of a printed brochure. The basic profile and functions of the Department concerned will be on public display.

(b) **General information services.** In addition to this e-enabling of the basic functionality of the government departments concerned, there could be much greater scope, content and depth of information that can be of interest and use for the people, and the citizens at large, that is the general information requirements. The general information requirement of the public in general can be broadly defined to a very large extent or scope and coverage, in wide ranging sectors such as Education and Tourism, apart from information from Census and the statistical information pertaining to various sectors of economy such as agriculture, industrial activity, plan details, etc. Before the Internet was established and became popular, a pioneering initiative was taken by National Informatics Centre (NIC) in the form of the Project GISTNIC (General Information Service Terminal of National Informatics Centre), the goal of which was to collate, compile and provide a single-point source of information of various sectors of interest to public in general. A wide range of subjects as, for example, Census data of all villages—population abstracts as also details of amenities were provided in addition to information of all tourist spots, information regarding universities and colleges, etc. Subjects such as rural technologies and specialized subjects as traditional sciences and technologies were also covered.

Stage 4: Allowing two way interactive communication with stake-holders to enable Internet enabled transactions (including financial transactions)

Once a web site is operational, correspondences from the citizens can be allowed through e-mail by providing them the appropriate e-mail addresses. For example, in China, the Beijing city government web site provides e-mail section to citizens apart from other important information such as government regulations, rules, laws or information about services offered by the government. In this e-mail section, the citizens are asked to express their suggestions, ideas, complaints (if any). The appropriate office concerned will be receiving these e-mails. Another approach is to permit citizens to clarify some queries (such as how to move the residence to Beijing) and the response to such queries will be posted on the web site itself.

The two-way interaction need not necessarily be online and web based. In the case of CARD (Computer aided Administration of the Registration Department) Project (executed by the Government of Andhra Pradesh and NIC in Andhra Pradesh State), title deeds are registered in one hour and encumberance certificates are issued in 20 minutes. The entire set-up is within the concerned sub-registrar office and managed by the office staff themselves. The citizens are provided the requisite services by the officers concerned in a very efficient manner.

Stage 5: Allowing online transactions by the citizens

In stage 4, the citizens interacted through kiosks, obtained services through online or the Internet, but made payments manually. But now, in Stage 5, in addition to permitting single online enquiry access to information, citizens may be enabled to make payments of fees and taxes, lodge complaints, file applications and perform any other transactions online through citizen kiosks installed at busy public locations. This is a much more advanced stage in e-governance not yet reached in developing countries but already reached in the developed world.

In Singapore, the citizens can transact every government business online and round the clock through specially designed kiosks which can be operated using smart cards. They can transact all government related business such as social welfare claims, tax assessment and payment, visa applications and license renewals, in addition to bank based fund or financial transactions using smart cards. However, this is a very advanced technological scenario, too advanced to be replicated immediately in all developing countries, even though plans are being drawn in developing countries to execute similar initiatives. Of course, limited transactions with the government by the citizens have been made online in these countries. The kiosks in public locations in Beijing, China, are successful; this is true of Korea as well as of India (for land record details).

Still, in these countries the financial transactions have not been made online, even though collections may be allowed alternatively (by an operator collecting money). The main reason for not executing financial transactions on the Internet has been the lack of security—lack of confident and secure financial transactions on the net. With the imminent implementation of public key infrastructure in the entire world, including the poor and developing countries, the confidence on financial transactions over the net may be developed, and with the proliferation of the smart cards, and online payments may be very soon a way of life in the entire developing world.

As regards the G2B (Government to Business) transactions, there have been impressive advances in various developing countries. For example, in the Phillipines, the Customs Bureau has enabled electronic payments of customs duty, electronic processing of clearance of documents and release of shipments. The new online system has resulted in fast and secure transmission of payment details. The time for reconciling of payments collected by banks and remittances to the national treasury has been reduced to a few days from several months. An information system called "Selectivity" categorizes shipments into high, medium or low risk transactions so that they can be coursed through appropriate examination procedures. This reduces fraud, corruption and other undesirable effects that normally result from the personal interaction of the officials with the business customers of the customs department.

Similar efforts, even though limited, have been made in other countries such as India, Thailand and Korea. In Thailand, the Customs Department has eliminated all manual processing, thus increasing efficiency and transparency. Similar effort is in place in Indian Customs Department which has started implementing Electronic Data Interchange (EDI). In Korea, the Public Procurement Service, a central government organization responsible for procuring commodities and arranging contracts for construction projects, has computerized the purchase process and accounting transactions using the EDI.

Cybershopping or e-procurement a growing trend in all countries, is popular for its ease of operation, efficiency and transparency. Contracting also is largely getting computerized. Databases of supply firms information are being set-up. Also, pre-qualification and cost accounting procedures are also being automated.

In countries such as Singapore, complete Enterprise Resource Planning (ERP) implementation has resulted in making compulsory the supplying firms to be e-enabled and compatible to the ERP environment (such as SAP).

Internet based tendering and contracting process can be designed in such a manner that the documents from contractors including performance records can be obtained using computer networks of relevant organizations directly instead of receiving them from middle men manually. This prevents false documents and data being supplied.

In many of these efforts, there is some scope for the government offloading some of its activities to private contractors who will operate the requisite services and earn their own revenues from the customers who may be individuals or business houses. There are models as Build, Own and Operate (BOO) or Build, Own, Operate and Transfer (BOOT) models. There have been some success stories in this regard all over the world. With increasing public sector reforms and privatization, these models may be more attractive than the conventional government owned operations of services. For example, in Hong Kong, the government web portal is entirely financed and maintained by a private company, thereby reducing the cost and risk to the government. Other governments also are expected to follow the lead and involve private sector in creating partnerships with suppliers and customers together with whom they can find ways to cut costs, improve quality and share benefits. The private partnership of the government should be taken up with caution as some of the information in government may be confidential and sensitive sometimes (though not always); also, the profit motive of private companies may not be always achieved by the government in developing countries. It is preferable that the government uses its own agencies for such purposes.

Stage 6: Enriching digital democracy

Democracy can be strengthened and enriched by ICT in multiple ways and modes. At least two important sets of ICT applications that can potentially support participatory and democratic processes, specially in the developing countries have been identified. These relate to applications that enrich and further empower the civil society organizations, and enable the citizens to express themselves by voting in democratic processes through Internet or by any other electronic means.

Examples of success stories on both these two applications identified above can be cited in developing countries. In the Grameena Bank Project in Bangladesh, a cell phone hand set could be bought by a poor woman (with the help of bank loan) who would in turn rent it out to other poor men and women who work in the fields. Finally, this resulted in a commercially viable rural cell phone service leading to significant economic development.

The application of ICT in civil society groups and organizations is of a wide spectrum. Several groups can even combine forces, raise funds and even challenge multinational corporations. These challengers can be as diverse as NGOs, trade unions and other self-help groups. Their networking of people could be achieved through ICT applications.

ICT has been used by the governments in various countries for strengthening democracy, democratic processes and reforms of democratic processes.

It is expected, in the long term, digital democracy will come to some countries in another form: electronic voting. As in USA and in Japan, voting sites can be set up for Internet based voting in elections. However, this will be very different in developing countries. In India and also in the Phillipines, the Election Commission has used ICT in several ways: the voters' information were kept in its web site along with details of timings and location of polling booths. Dissemination of such information through Internet was enhanced with the help of News Media. However, in developing countries largely the voting process itself is either manual or partly electronic. In India and other developing countries, even though Electronic Voting Machines (EVMs) have been used for voting purposes, the entire operation is still manual, even though Internet was used for purposes other than voting itself. Voting on the Internet has now made a beginning in limited scale in many small polls, especially in the developed countries.

Stage 7: Electronically integrated or joined up government with Legislature and Judiciary

In the final stage of e-governance a comprehensive web portal and a smart card integrates information and services from various responsible government agencies. In this stage both horizontal integration of services across departments and vertical integration of service delivery is expected to take place. As already available in Singapore and also being experimented in many states such as Andhra Pradesh, on a web portal users can obtain services across different geographical levels of government within the same functional area and also access different functions. Thus, in a scenario like this, a citizen could submit a change of address on driving license and such a change would automatically be effected in all other sectors such as health, education, elections, taxation, etc. (thereby avoiding need for multiple filing). This is true of horizontal integration of services in an e-government. Citizens also can use portals to make payments and other transactions, obtain a checklist of enclosures required for an application, find answers to frequently asked questions (faq) and engage the services of relevant commercial enterprises. In Singapore and Hong Kong, such state-of-the-art portals are operational. The Government of Taipei (Taiwan) also has set up a "One Window" service on the Internet for tax administration, public health and e-commerce. Smart cards are gradually becoming functional in several Asian Countries for all such activities.

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E-Governance (CSC-307)

BSc. CSIT 5th Semester

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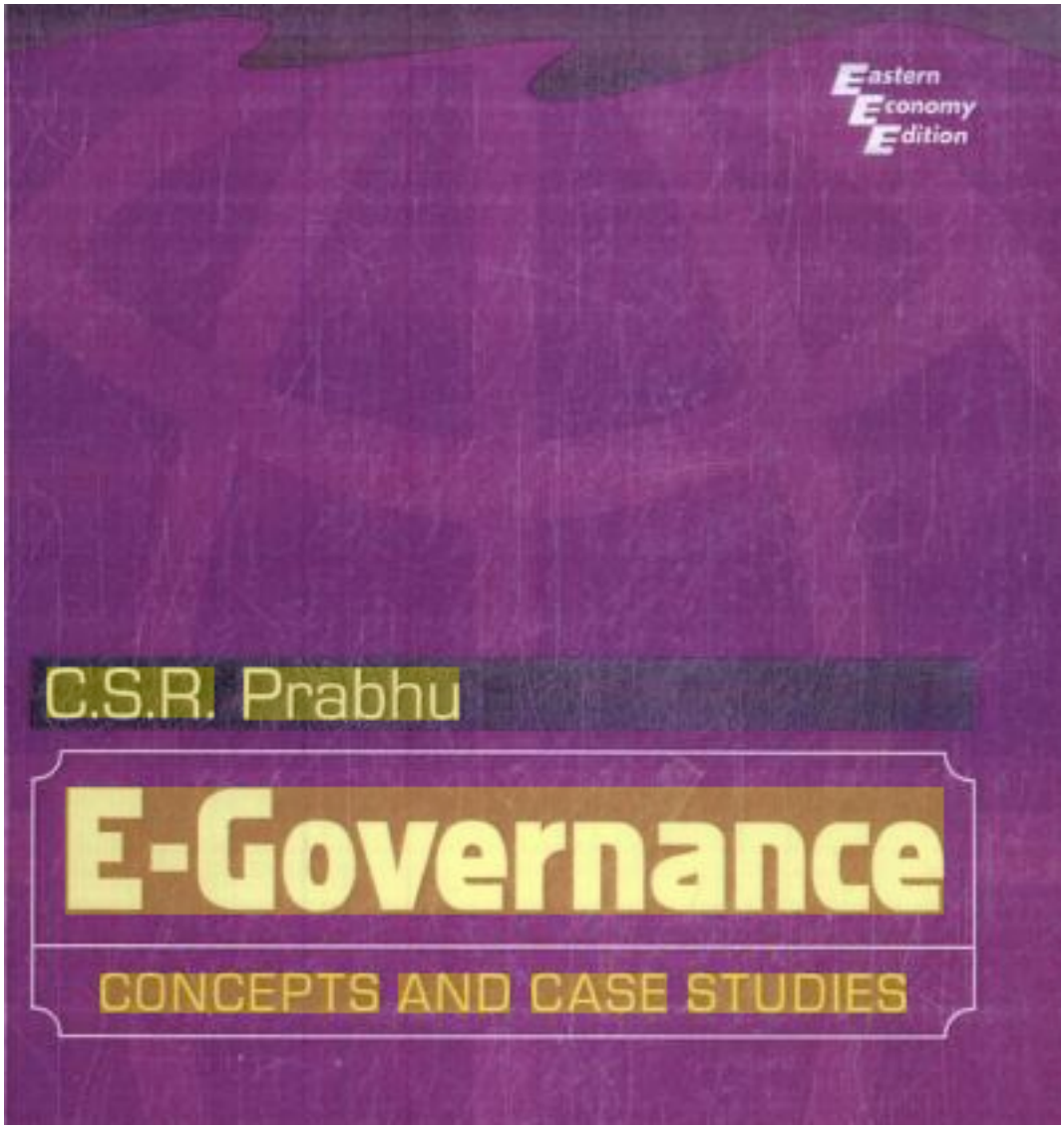

E-Governance: Concepts and Case Studies
C.S.R. Prabhu

PHI

Unit 4. Data Warehousing and Data Mining in Government

Introduction

Data warehousing and data mining are the important means of preparing the government to face the challenges of the new millennium.

Data warehousing and data mining technologies have extensive potential applications in the government—in various Central Government sectors such as Agriculture, Rural Development, Health and Energy and also in State Government activities. These technologies can and should therefore be implemented.

National Data Warehouses

A large number of national data warehouses can be identified from the existing data resources within the Central Government Ministries. Let us examine these potential subject areas on which data warehouses may be developed at present and also in future.

Census Data

The Registrar General and Census Commissioner of India decennially compiles information of all individuals, villages, population groups, etc. This information is wide ranging such as the individual-slip, a compilation of information of individual households, of which a database of 5% sample is maintained for analysis. A data warehouse can be built from this database upon which OLAP techniques can be applied. Data mining also can be performed for analysis and knowledge discovery.

Prices of Essential Commodities

The Ministry of Food and Civil Supplies, Government of India, compiles daily data (on weekly basis) for about 300 observation centres in the entire country on the prices of essential commodities such as rice, edible oils, etc. This data is compiled at the district level by the respective State Government agencies and transmitted online to Delhi for aggregation and storage. A data warehouse can be built for this data, and OLAP techniques can be applied for its analysis. A data mining and forecasting technique can be applied for advance forecasting of the actual prices of these essential commodities. The forecasting model can be strengthened for more accurate forecasting by taking into account the external factors such as rainfall, growth rate of population and inflation.

Other areas for Data Warehousing and Data Mining

Agriculture

The Agricultural Census performed by the Ministry of Agriculture, Government of India, compiles a large number of agricultural parameters at the national level. District-wise agricultural production, area and yield of crops is compiled; this can be built into a data warehouse for analysis, mining and forecasting. Statistics on consumption of fertilizers also can be turned into a data mart.

Data on agricultural inputs such as seeds and fertilizers can also be effectively analyzed in a data warehouse. Data from livestock census can be turned into a data warehouse. Land-use pattern statistics can also be analyzed in a warehousing environment. Other data such as watershed details and also agricultural credit data can be effectively used for analysis by applying the technologies of OLAP and data mining.

Thus there is substantial scope for application of data warehousing and data mining techniques in Agricultural sector.

Rural Development

Data on individuals below poverty line (BPL survey) can be built into a data warehouse. Drinking water census data (from Drinking Water Mission) can be effectively utilized by OLAP and data mining technologies. Monitoring and analysis of progress made on implementation of rural development programmes can also be made using OLAP and data mining techniques.

Health

Community needs assessment data, immunization data, data from national programmes on controlling blindness, leprosy, malaria can all be used for data warehousing implementation, OLAP and data mining applications.

Planning

Data from surveys covering all the planning of a country is managed in a warehouse and various types of analytical queries and reports can then be generated.

Education

Data bank on trade (imports and exports) can be analyzed and converted into a data warehouse.* World price monitoring system can be made to perform better by using data warehousing and data mining technologies. Provisional estimates of import and export also be made more accurate using forecasting techniques.

Commerce and Trade

Data bank on trade (imports and exports) can be analyzed and converted into a data warehouse.* World price monitoring system can be made to perform better by using data warehousing and data mining technologies. Provisional estimates of import and export also be made more accurate using forecasting techniques.

Other Sectors.

In addition to the above mentioned important applications, there exist a number of other potential application areas for data warehousing and data mining, as follows:

Tourism. Tourist arrival behaviour and preferences; tourism products data; foreign exchange earnings data; and Hotels, Travel and Transportation data.

Programme Implementation. Central projects data (for monitoring).

Revenue. Customs data, central excise data, and commercial taxes data (state government).

Economic affairs. Budget and expenditure data; and annual economic survey.

Audit and accounts. Government accounts data.

All government departments or organizations are deeply involved in generating and processing a large amount of data. Conventionally, the government departments have largely been satisfied with developing single management information systems (MIS), or in limited cases, a few databases which were used online for limited reporting purposes. Much of the analysis work was done manually by the Department of Statistics in the Central Government or in any State Government. The techniques used for analysis were conventional statistical techniques on largely batch-mode processing. Prior to the advent of data warehousing and data mining technologies nobody was aware of any better techniques for this activity. In fact, data warehousing and data mining technologies could lead to the most significant advancements in the government functioning, if properly applied and used in the government activities. With their advent and prominence, there is a paradigm shift which may finally result in improved governance and better planning by better utilization of data. Instead of the officials wasting their time in processing data, they can rely on data warehousing and data mining technologies for their day-to-day decision making and concentrate more on the practical implementation of the decisions so taken for better performance of developmental activities.

Further, even though various departments in the government (State or Central) are functionally interlinked, the data is presently generated, maintained and used independently in each department. This leads to poor (independent) decision making and isolated planning. Herein lies the importance of data warehousing technology. Different data marts for separate departments, if built, can be integrated into one data warehouse for the government. This is true for State Government and Central Government. Thus data warehouses can be built at Central level, State level and also at District level.

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CH5 – e-Governance – Case Studies

Nepal

1. IT Policy & Cyber Law
2. IT Implementation in the Land Reform
3. Human Resource Management Software

India

1. NICNET
2. Collectorate
3. Computer-aided Administration of Registration Department (CARD)
4. Smart Nagarpalika
5. National Reservoir Level and Capacity Monitoring System
6. Computerization in *'Andra Pradesh'*

7. Ekal Seva Kentra

8. Sachivalaya Vahini

9. Bhoomi

10. IT in Judiciary

11. E-Khazana

12. DGFT

13. PRAJA

14. E-Seva

15. E-Panchayat

16. General Information Services of National Informatics Centre

Other Countries

17. E-Governance initiative in USA;

18. E-Governance in China;

19. E-Governance in Sri Lanka.

20. E-Governance in Brazil